

Jarvis D. Haupt

CONTACT INFORMATION	University of Minnesota Dept. of Electrical and Computer Engr. 6-183 Keller Hall, 200 Union Street SE Minneapolis, MN 55455	Office: (612) 625-7322 Fax: (612) 625-4583 Email: jdhaupt@umn.edu Website: www.ece.umn.edu/~jdhaupt
RESEARCH INTERESTS	High dimensional statistical inference, compressive sampling, adaptive sampling techniques, statistical signal processing and learning theory; applications in communications and networks, non-destructive evaluation, conventional and medical imaging, and data science.	
ACADEMIC EMPLOYMENT	Associate Professor, since August 2016 Department of Electrical and Computer Engineering University of Minnesota, Minneapolis, MN Assistant Professor, August 2010 - August 2016 Department of Electrical and Computer Engineering University of Minnesota, Minneapolis, MN Postdoctoral Research Associate, August 2009–August 2010 Department of Electrical and Computer Engineering Rice University, Houston, TX Mentor: Professor Richard Baraniuk Research Assistant, September 2004–August 2009 Department of Electrical and Computer Engineering University of Wisconsin–Madison Mentor: Professor Robert Nowak Co-Chair, Teaching Improvement Program, September 2004–May 2005 Department of Engineering Professional Development University of Wisconsin–Madison Teaching Assistant, September 2003–May 2004 Department of Electrical and Computer Engineering University of Wisconsin–Madison	
EDUCATION	Ph.D. Electrical Engineering (Mathematics Minor), August 2009 University of Wisconsin–Madison Advisor: Professor Robert Nowak Thesis Title: <i>New theory and methods in adaptive and compressive sampling for sparse discovery</i> M.S. Electrical Engineering, August 2003 University of Wisconsin–Madison Advisor: Professor William Sethares B.S. Electrical Engineering (Additional Major in Mathematics), May 2002 University of Wisconsin–Madison	

BOOK
CHAPTERS

1. J. Haupt and R. Nowak, "Adaptive sensing for sparse recovery," in *Compressed Sensing: Theory and Applications*, Y. Eldar and G. Kutyniok eds., Cambridge University Press, 2012.

SUBMITTED
MANUSCRIPTS

1. X. Li and J. Haupt, "Robust low-complexity randomized methods for locating outliers in large matrices," submitted December 2016.

Preprint: <http://arxiv.org/abs/1612.02334>

2. X. Li, T. Zhao, R. Arora, H. Liu, and J. Haupt, "Nonconvex sparse learning via stochastic optimization with progressive variance reduction," submitted November 2016. Preprint: <http://arxiv.org/abs/1605.02711>

3. A. V. Sambasivan and J. Haupt, "Minimax lower bounds for noisy matrix completion under sparse factor models," submitted September 2015, under revision.

Preprint: <http://arxiv.org/abs/1510.00701>

JOURNAL
PUBLICATIONS

1. S. Jain, U. Oswal, K. S. Xu, B. Eriksson, and J. Haupt, "A compressed sensing decomposition of electrodermal activity signals," *IEEE Transactions on Biomedical Engineering*, 2016.

2. J. Druce, S. Gonella, M. Kadkhodaie, S. Jain, J.D. Haupt, "Locating material defects via wavefield demixing with morphologically germane dictionaries," *Structural Health Monitoring (SHM)*, 2016.

3. A. Soni, S. Jain, J. Haupt, and S. Gonella "Noisy matrix completion under sparse factor models," *IEEE Transactions on Information Theory*, vol. 62, no. 6, pp. 3636-3661, June 2016.

4. J. Druce, J. Haupt, and S. Gonella "Anomaly-sensitive dictionary learning for structural diagnostics from ultrasonic wavefields," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, vol. 62, no. 7, pp. 1384-1396, July 2015.

5. X. Li and J. Haupt "Identifying outliers in large matrices via randomized adaptive compressive sampling," *IEEE Transactions on Signal Processing*, vol. 63, no. 7, pp. 1792-1807, March-April 2015.

6. A. Soni and J. Haupt, "On the fundamental limits of recovering tree sparse vectors from noisy linear measurements," *IEEE Transactions on Information Theory*, vol. 60, no. 1, pp. 133-149, January 2014.

7. S. Gonella and J. Haupt, "Automated defect localization via low rank plus outlier modeling of propagating wavefield data," *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, vol. 60, no. 12, pp. 2553-2565, December 2013.

8. J. Haupt, R. Castro, and R. Nowak, "Distilled sensing: Adaptive sampling for sparse detection and estimation," *IEEE Transactions on Information Theory*, vol. 57, no. 9, pp. 6222-6235, September 2011.

9. J. Haupt, W.U. Bajwa, G. Raz, and R. Nowak, "Toeplitz compressed sensing matrices with applications to sparse channel estimation," *IEEE Transactions on Information Theory*, vol. 56, no. 11, pp. 5862-5875, November 2010.

JOURNAL
PUBLICATIONS
(CONTINUED)

10. W.U. Bajwa, J. Haupt, A.M. Sayeed, and R. Nowak, "Compressed channel sensing: A new approach to estimating sparse multipath channels," *Proceedings of the IEEE*, vol. 98, no. 6, pp. 1058-1076, July 2010.
11. J. Haupt, W.U. Bajwa, M. Rabbat, and R. Nowak, "Compressed sensing for networked data," *IEEE Signal Processing Magazine—Special Issue on Compressive Sensing*, vol. 25, no. 2, pp. 92-101, March 2008.
12. W.U. Bajwa, J. Haupt, A.M. Sayeed, and R. Nowak, "Joint source-channel communication for distributed estimation in sensor networks," *IEEE Transactions on Information Theory—Special Issue on Relaying and Cooperation in Communication Networks*, vol. 53, no. 10, pp. 3629-3653, October 2007.
13. J. Haupt and R. Nowak, "Signal reconstruction from noisy random projections," *IEEE Transactions on Information Theory*, vol. 52, no. 9, pp. 4036-4048, Sept. 2006.

CONFERENCE
PUBLICATIONS

1. M. K. Elyaderani, S. Jain, J. Druce, S. Gonella, and J. Haupt, "Group-level support recovery guarantees for group lasso estimator," *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing*, 2017 (Accepted, to appear).
2. S. Jain and J. Haupt, "On convolutional approximations to linear dimensionality reduction operators for large scale data processing," *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing*, 2017 (Accepted, to appear).
3. S. Rambhatla, X. Li and J. Haupt, "A dictionary based generalization of robust PCA," *Proc. IEEE Global Conference on Signal and Information Processing*, December 2016.
4. J. Ren, X. Li and J. Haupt, "Robust PCA via tensor outlier pursuit," *Proc. Asilomar Conference on Signals, Systems, and Computers*, November 2016.
5. J. Druce, S. Gonella, M. Kadkhodaie, S. Jain, and J. Haupt, "Defect triangulation via demixing algorithms based on dictionaries with different morphological complexity," *Proc. 8th European Workshop On Structural Health Monitoring*, July 2016.
6. X. Li, T. Zhao, R. Arora, H. Liu, and J. Haupt, "Stochastic variance reduced optimization for nonconvex sparse learning," *JMLR Workshop and Conference Proceedings*, Vol. 48: Proceedings of the 33rd Intl. Conference on Machine Learning, June 2016.
7. X. Li and J. Haupt, "A refined analysis for the sample complexity of adaptive compressive outlier sensing," *IEEE Workshop on Statistical Signal Processing*, June 2016.
8. M. Kadkhodaie, S. Jain, J. Haupt, J. Druce, and S. Gonella, "Locating rare and weak material anomalies by convex demixing of propagating wavefields," *Proc. IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing*, pp. 373-376, December 2015.
9. X. Li and J. Haupt, "Locating salient group-structured image features via adaptive compressive sensing," *Proc. IEEE Global Conference on Signal and Information Processing*, December 2015. (**Best Student Paper Award Winner**)

10. J. Druce, M. Kadkhodaie, J. Haupt, and S. Gonella, "Structural diagnostics via anomaly-driven demixing of wavefield data," *Proc. International Workshop on Structural Health Monitoring*, pp. 1236-1242, September 2015.
(**Student Best Paper Award Winner**)
11. A. Weinstein, L. Fortson, T. Brantseg, C. Rulten, R. Lutz, J. Haupt, M. Kadkhodaie Elyaderani, and J. Quinn, "Testing a novel self-assembling data paradigm in the context of IACT data," *Proc. International Cosmic Ray Conference*, July 2015.
12. A. Jang, A. Gutierrez, D. Xiao, C. A. Corum, V. Mandic, J. Haupt, and M. Garwood, "Reconstruction strategies for pure 2D spatiotemporal MRI," *Proc. Intl. Society for Magnetic Resonance in Medicine Annual Mtg.*, June 2015.
13. I. Bogunovic, V. Cevher, J. Haupt, and J. Scarlett, "Active learning of self-concordant like multi-index functions," *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing*, pp. 2189-2193, April 2015.
14. X. Li and J. Haupt, "Outlier identification via randomized adaptive compressive sampling," *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing*, pp. 3302-3306, April 2015.
15. A. Soni, S. Jain, J. Haupt, and S. Gonella, "Error bounds for maximum likelihood matrix completion under sparse factor models," *Proc. IEEE Global Conference on Signal and Information Processing*, pp. 399-403, December 2014.
16. A. Soni and J. Haupt, "Estimation error guarantees for Poisson denoising with sparse and structured dictionary models," *Proc. IEEE International Symposium on Information Theory*, pp. 2002-2006, June/July 2014.
17. J. D. Haupt, N. D. Sidiropoulos, and G. B. Giannakis "Sparse dictionary learning from 1-bit data," *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing*, pp. 7664-7668, May 2014.
18. A. Soni, J. Haupt, and F. Porikli "Recycled linear classifiers for multiclass classification," *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing*, pp. 2957-2961, May 2014.
19. J. Druce, J. D. Haupt, and S. Gonella, "Anomaly detection in heterogenous media via saliency analysis of propagating wavefields," *Proc. SPIE Conference on Health Monitoring of Structural and Biological Systems*, March 2014.
20. J. Haupt, "Locating salient items in large data collections with compressive linear measurements," *Proc. IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing*, pp. 9-12, December 2013.
21. A. Soni and J. Haupt, "Fundamental limits for support recovery of tree-sparse signals from noisy compressive samples," *Proc. IEEE Global Conference on Signal and Information Processing*, pp. 961-964, December 2013.
22. S. Rambhatla and J. Haupt, "Semi-blind source separation via sparse representations and online dictionary learning," *Proc. Asilomar Conference on Signals, Systems, and Computers*, pp. 1687-1691, November 2013.

23. S. Jain, A. Soni, and J. Haupt, "Compressive measurement designs for estimating structured signals in structured clutter: A Bayesian experimental design approach," *Proc. Asilomar Conference on Signals, Systems, and Computers*, pp. 163-167, November 2013.
24. S. Jain, A. Soni, J. Haupt, N. Rao, and R. Nowak, "Knowledge-enhanced compressive measurement designs for estimating sparse signals in clutter," at *Signal Processing with Adaptive Structured Sparse Representations (SPARS)*, July 2013.
25. A. Soni and J. Haupt, "Level set estimation from compressive measurements using box constrained total variation regularization," *Proc. IEEE International Conference on Image Processing*, pp. 2573-2576, September-October 2012.
26. J. Haupt, R. Baraniuk, R. Castro, and R. Nowak, "Sequentially designed compressed sensing," *Proc. IEEE/SP Workshop on Statistical Signal Processing*, pp. 401-404, Ann Arbor, MI, August 2012.
27. A. Soni and J. Haupt, "Learning sparse representations for adaptive compressive sensing," *Proc. 37th IEEE International Conference on Acoustics, Speech and Signal Processing*, pp. 2097-2100, Kyoto, Japan, March 2012.
28. A. Soni and J. Haupt, "Efficient adaptive compressive sensing using sparse hierarchical learned dictionaries," *Proc. 45th Asilomar Conference on Signals, Systems, and Computers*, pp. 1250-1254, Pacific Grove, CA, November 2011.
29. L. Applebaum, W.U. Bajwa, A.R. Calderbank, J. Haupt and R. Nowak, "Deterministic pilot sequences for sparse channel estimation in OFDM systems," *Proc. 17th Intl. Conference on Digital Signal Processing*, pp. 1-7, Corfu, Greece, July 2011.
30. J. Haupt and R. Baraniuk, "Robust support recovery using sparse compressive sensing matrices," *Proc. 45th Annual Conference on Information Sciences and Systems*, pp. 1-6, Baltimore, MD, March 2011.
31. J. Haupt, R. Castro, and R. Nowak, "Improved bounds for sparse recovery from adaptive measurements," *Proc. IEEE International Symposium on Information Theory*, pp. 1563-1567, Austin, TX, June 2010.
32. J. Haupt, L. Applebaum, and R. Nowak, "On the restricted isometry of deterministically subsampled Fourier matrices," *Proc. 44th Annual Conference on Information Sciences and Systems*, pp. 1-6, Princeton, NJ, March 2010.
33. J. Haupt, R. Baraniuk, R. Castro, and R. Nowak, "Compressive distilled sensing: Sparse recovery using adaptivity in compressive measurements," *Proc. 43rd Asilomar Conference on Signals, Systems, and Computers*, pp. 1551-1555, Pacific Grove, CA, November 2009.
34. J. Haupt, R. Castro, and R. Nowak, "Distilled sensing: Selective sampling for sparse signal recovery," *Proc. 12th International Conference on Artificial Intelligence and Statistics*, pp. 216-223, Clearwater Beach, FL, April 2009.
35. J. Haupt, R. Castro, and R. Nowak, "Adaptive sensing for sparse signal recovery," *Proc. 13th IEEE Digital Signal Processing Workshop and 5th Workshop on Signal Processing Education*, pp. 702-707, Marco Island, FL, January 2009.

36. J. Haupt, R. Castro, and R. Nowak, "Adaptive discovery of sparse signals in noise," *Proc. 42nd Asilomar Conference on Signals, Systems, and Computers*, pp. 1727-1731, Pacific Grove, CA, October 2008.
37. G. Fudge, M. Chivers, S. Ravindran, R. Bland, P. Pace, and J. Haupt, "A Nyquist folding analog-to-information receiver," *Proc. 42nd Asilomar Conference on Signals, Systems, and Computers*, pp. 541-545, Pacific Grove, CA, October 2008.
38. W.U. Bajwa, J. Haupt, G. Raz, and R. Nowak, "Compressed channel sensing," *Proc. 42nd Conference on Information Sciences and Systems*, pp. 5-10, Princeton, NJ, March 2008.
39. R. Castro, J. Haupt, R. Nowak, and G. Raz, "Finding needles in noisy haystacks," *Proc. 33rd IEEE International Conference on Acoustics, Speech and Signal Processing*, pp. 5133-5136, Las Vegas, NV, April 2008.
40. W.U. Bajwa, J. Haupt, G. Raz, S.J. Wright, and R. Nowak, "Toeplitz structured compressed sensing matrices," *Proc. 14th IEEE/SP Workshop on Statistical Signal Processing*, pp. 294-298, Madison, WI, August 2007.
41. F. Boyle, J. Haupt, G. Fudge, and A. Yeh, "Detecting signal structure from randomly-sampled data," *Proc. 14th IEEE/SP Workshop on Statistical Signal Processing*, pp. 326-330, Madison, WI, August 2007.
42. J. Haupt and R. Nowak, "Compressive sampling for signal detection," *Proc. 32nd IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. 3, pp. 1509-1512, Honolulu, HI, April 2007.
43. J. Haupt, R. Castro, R. Nowak, G. Fudge, and A. Yeh, "Compressive sampling for signal classification," *Proc. 40th Asilomar Conference on Signals, Systems, and Computers*, pp. 1430-1434, Pacific Grove, CA, October-November 2006.
44. J. Haupt and R. Nowak, "Compressive sampling vs. conventional imaging," *Proc. 13th IEEE International Conference on Image Processing*, pp. 1269-1272, Atlanta, GA, October 2006.
45. W.U. Bajwa, J. Haupt, A.M. Sayeed, and R. Nowak, "A universal matched source-channel communication scheme for wireless sensor ensembles," *Proc. 31st IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. 5, pp. 1153-1156, Toulouse, France, May 2006.
46. R. Castro, J. Haupt, and R. Nowak, "Compressed sensing vs. active learning," *Proc. 31st IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. 3, pp. 820-823, Toulouse, France, May 2006.
47. W.U. Bajwa, J. Haupt, A.M. Sayeed, and R. Nowak, "Compressive wireless sensing," *Proc. 5th International Conference on Information Processing in Sensor Networks*, pp. 134-142, Nashville, TN, April 2006.
48. M. Rabbat, J. Haupt, A. Singh, and R. Nowak, "Decentralized compression and predistribution via randomized gossiping," *Proc. 5th International Conference on Information Processing in Sensor Networks*, pp. 51-59, Nashville, TN, April 2006.

- CONFERENCE PUBLICATIONS (CONTINUED)
49. J. Haupt and R. Nowak, "Signal reconstruction from noisy random projections with applications to wireless sensing," *Proc. 13th IEEE/SP Workshop on Statistical Signal Processing*, pp. 1182-1187, Bordeaux, France, July 2005.
- PATENT APPLICATIONS
1. "System and method for reconstructing images from spatiotemporally-encoded magnetic resonance imaging data," Albert Jang, Michael Garwood, Vuk Mandic, Jarvis Haupt, Di Xiao, Alexander Gutierrez, Naoharu Kobayashi, and Steen Moeller, May 2015 (Provisional Application).
- PATENTS AWARDED
1. "Method of adaptive data acquisition," Rui M. Castro, Jarvis D. Haupt, and Robert D. Nowak, US Patent Number 8521473, issued August 27, 2013.
2. "Determining channel coefficients in a multipath channel," Waheed U. Bajwa, Akbar M. Sayeed, Robert D. Nowak, and Jarvis Haupt, US Patent Number 8320489, issued November 27, 2012.
3. "System and method of signal sensing, sampling, and processing through the exploitation of channel mismatch effects," Gil M. Raz, Jeffrey H. Jackson, and Jarvis D. Haupt, US Patent Number 7994959, issued August 9, 2011.
- TALKS AND PRESENTATIONS
1. "Locating outliers in large matrices with adaptive compressive sampling," University of Minnesota IMA Data Science Seminar, December 2015.
2. "Fast Image Reconstruction for Spatiotemporal MRI (Toward Low Cost, Portable, Inexpensive Systems)," University of Minnesota ECE Insider's Lunch, November 2015.
3. "Computationally-efficient approximations to arbitrary linear dimensionality reduction operators," SIAM Conference on Applied Linear Algebra, October 2015.
4. "Sparsity and structure in modern signal and information processing," University of Minnesota ECE Colloquium, September 2015.
5. "Locating outliers in large matrices with adaptive compressive sampling," Systems & Technology Research, Woburn, MA, August 2015.
6. "Locating outliers in large matrices with adaptive compressive sampling," University of Michigan Applied and Interdisciplinary Mathematics Seminar, November 2014.
7. "Adaptive compressive sensing of tree-sparse signals: Fundamental limits, implications, and applications," University of Michigan Communications & Signal Processing Seminar, November 2014.
8. "Maximum likelihood matrix completion under sparse factor models: Error guarantees and efficient algorithms," Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, Providence, RI, October 2014.
9. "Adaptive compressive sensing of signals exhibiting tree-structured sparsity," ASA Conference on Statistical Learning and Data Mining, Durham, NC, June 2014.
10. "Seeing, sensing, and sampling on a budget," seminar at the University of Minnesota Osher Lifelong Learning Institute Afternoon with the Liberal Arts, January 2014.

TALKS AND
PRESENTATIONS
(CONTINUED)

11. "Compressive sensing strategies for locating and estimating target signals in cluttered environments," DHS S&T Aviation Security Technology Industry Day, Washington DC, September 2013.
12. "Compressive Saliency Sensing: Locating outliers in large data collections from compressive measurements," Duke University Workshop on Sensing and Analysis of High-Dimensional Data, July 2013.
13. "Sensing and inference via sparse modeling and dictionary learning," Seminar at 3M, St. Paul MN, April 2013.
14. "Adaptive compressive imaging using sparse hierarchical learned dictionaries," Bellairs Workshop on Signal Processing and Networks, February 2013.
15. "Adaptive compressive imaging using sparse hierarchical learned dictionaries," Institute for Pure and Applied Mathematics (IPAM) Workshop on Adaptive Data Analysis and Sparsity, January 2013.
16. "Exploiting saliency in compressive and adaptive sensing," Duke University ECE Seminar, December 2012.
17. "Compressive sensing in clutter," DHS S&T/DARPA Aviation Security Industry Day, Washington DC, September 2012.
18. "Learning sparse representations for adaptive compressive sensing" (poster), DHS S&T/DARPA Aviation Security Industry Day, Washington DC, September 2012.
19. "Exploiting saliency in compressive and adaptive sensing," SIAM Annual Meeting, Minneapolis, MN, July 2012.
20. "Sparsity for sparsity's sake: Applications of sparse measurement matrices in high dimensional sparse inference," JASON Summer Study on Compressive Sensing, La Jolla, CA, June 2012.
21. "Exploiting saliency in compressive and adaptive sensing," IMS/ASA Spring Research Conference, Harvard University, June 2012.
22. "Adaptive compressive imaging using sparse hierarchical learned dictionaries," SIAM Conference on Imaging Science, Philadelphia, PA, May 2012.
23. "Seeing, sensing, & sampling on a budget," University of Minnesota College of Science & Engineering 50th Reunion, May 2012.
24. "Sensible sensing: Sparsity, saliency, & adaptivity," University of Minnesota ECE Open House, May 2012.
25. "Exploiting saliency in compressive and adaptive sensing," University of Wisconsin ECE Graduate Seminar, February 2012.
26. "Sparse measurement matrices for sequential adaptive compressive sensing" (poster), IMA Workshop on High Dimensional Phenomena, Minneapolis, MN, September 2011.
27. "Sparse measurement matrices for sequential adaptive compressive sensing" (poster), Workshop on Sensing and Analysis of High-Dimensional Data, Duke Univ., July 2011.

TALKS AND
PRESENTATIONS
(CONTINUED)

28. “Active sensing and learning,” tutorial (with Robert Nowak, University of Wisconsin), ICASSP, Prague, Czech Republic, May 2011.
29. “An introduction to compressed sensing,” Honeywell Automation & Control Solutions, Golden Valley, MN, May 2011.
30. “Distilled Sensing: Adaptive Sampling for Sparse Recovery,” The Ohio State University, Information Processing Systems Seminar, March 2011.
31. “The symbiosis of sparsity and adaptivity: Closing the loop between sensing and processing,” University of Minnesota ECE Colloquium, November 2010.
32. “Distilled Sensing for sparse recovery,” Meeting of the Acoustical Society of America, Baltimore, MD, April 2010.
33. “Distilled Sensing for imaging,” Society for Industrial and Applied Mathematics (SIAM) Conference on Imaging Science, Chicago, IL, April 2010.
34. “Distilled Sensing and the power of adaptive sampling for sparse recovery,” University of Minnesota, Minneapolis, MN, March 2010.
35. “Distilled Sensing: Improved sparse recovery using adaptive sampling,” Graduate Seminar, University of Utah, Salt Lake City, UT, February 2010.
36. “Distilled Sensing: Adaptive sensing for sparse recovery,” Neural Information Processing Systems (NIPS) Workshop on Manifolds, Sparsity, and Structured Models, Whistler, BC Canada, December 2009.
37. “Distilled Sensing and the power of active sampling for sparse recovery,” DSP Seminar, Rice University, Houston, TX, November 2009.
38. “Structured non-uniform sampling for recovery of sparse wideband signals,” Turophile Workshop, University of Wisconsin–Madison, June 2009.
39. “Compressive sampling in noisy environments,” Sandia National Laboratories, Albuquerque, NM, December 2008.
40. “Finding needles in noisy haystacks,” CommDSP Seminar, UW–Madison, April 2008.
41. “Beyond luck–The mathematics of winning poker,” CommDSP Seminar, UW–Madison, December 2007.
42. “Compressive sampling and hypothesis testing,” CommDSP Seminar, UW–Madison, October 2006.
43. “Methods in Compressed Sensing,” Workshop on Computational/Compressive Imaging, Lockheed Martin, Orlando, FL, September 2006.
44. “Compressive sampling,” L-3 Communications/Integrated Systems, Greenville, TX, June 2006.
45. “Optimization,” L-3 Communications/Integrated Systems, Greenville, TX, June 2006.

TALKS AND
PRESENTATIONS
(CONTINUED)

46. “Analog-to-information,” L-3 Communications/Integrated Systems, Greenville, TX, June 2006.
47. “Beyond luck—The mathematics of winning poker,” Math Club Seminar, UW–Madison, February 2006.
48. “Astronomical imaging,” CommDSP Seminar, UW–Madison, January 2006.
49. “Compressed sensing,” GE Healthcare, Waukesha, WI, June 2005.
50. “Digital and analog security,” CommDSP Seminar, UW–Madison, November 2004.

CURRENT
RESEARCH
SUPPORT

“Fundamental Analyses and Techniques of Plenoptic Imaging,” DARPA Contract HR0011-16-C-0024, January 2016 – January 2020. Joint effort with University of Minnesota co-PIs James Leger (Dept. of Electrical and Computer Engr.), Joey Talghader (Dept. of Electrical and Computer Engr.), and Gary Meyer (Dept. of Computer Science and Engr.); and Richard Paxman (MDA Imaging Systems).

“Model-based Matrix Completion: A Paradigm for Imputation, Fusion, and Inference from Multi-Modal Data,” (DARPA Young Faculty Award), Grant N66001-14-1-4047, September 2014 – September 2017. (*Director’s Fellowship Award*, September 2016.)

“Collaborative Research: CDS&E: Investigating a Self-assembling Data Paradigm for Detector Arrays,” NSF Grant PHY-1419240, July 2014 – June 2017. Joint effort with University of Minnesota co-PI Lucy Fortson (School of Physics and Astronomy) and Iowa State co-PI Amanda Weinstein (Dept. of Physics and Astronomy).

“Large-scale Sparse Bayesian Modeling, Inference, and Design,” Swiss National Science Foundation Award SNF CRSII2-147633, November 2013 – October 2017. *Advisory role*, in collaboration with Volkan Cevher (EPFL, Lausanne Switzerland) and Andreas Krause (ETH Zurich).

PREVIOUS
RESEARCH
SUPPORT

“Subspace-based Vehicle Classification from Remote Laser Vibrometry Data,” Wright State University (NSF Prime), August 2015 – August 2016. Joint effort with University of Minnesota co-PI Stefano Gonella (Dept. of Civil, Environmental, and Geo- Engr.)

“Spectral Tweets: A Community Paradigm for Spatio-temporal Cognitive Sensing and Access,” NSF Grant AST-1247885, September 2012 – August 2016. Joint effort with University of Minnesota co-PIs Nikos Sidiropoulos (Dept. of Electrical and Computer Engr.) and Georgios Giannakis (Dept. of Electrical and Computer Engr.).

“CIF: Small: Beyond Sparsity – Exploiting Saliency in Compressive and Adaptive Sensing” NSF Grant CCF-1217751, July 2012 – June 2016.

“Unsupervised Diagnostics of Solid Materials via Anomaly-Sensitive Dictionary Learning of Spatiotemporal Wave Response Data,” University of Minnesota Digital Technology Initiative Grant, July 2014 – June 2015. Joint effort with University of Minnesota co-PI Stefano Gonella (Dept. of Civil, Environmental, and Geo- Engr.).

“Knowledge Enhanced Compressive Measurement: Active Sensing via Compressive Illumination” DARPA Defense Sciences Office/Office of Naval Research Grant N66001-10-1-4090, November 2010 – May 2014. Subcontracted by the Ohio State University.

CONFERENCE
AND WORKSHOP
EVENTS
ORGANIZED

“Optimization and adaptivity in big data,” Poster session at *IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing*, Dec. 2015. Co-organized with Laura Balzano (University of Michigan) and Volkan Cevher (EPFL).

“New sensing and inference methods for large-scale data,” Lecture session at *IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing*, Dec. 2013. Co-organized with Phil Schniter (Ohio State University), Volkan Cevher (EPFL).

“New sensing and statistical inference methods,” Symposium at 1ST *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, December 2013. Co-organized with Waheed U. Bajwa (Rutgers University) and Rui Castro (Eindhoven University of Technology).

“Active sensing and learning,” lecture session at *Asilomar Conference on Signals, Systems, and Computers*, November 2013.

“Adaptive sensing,” poster session at *Asilomar Conference on Signals, Systems, and Computers*, November 2011.

“Compressive sensing applications in networking,” lecture session at *Asilomar Conference on Signals, Systems, and Computers*, November 2011. Co-organized with Michael Rabbat (McGill University).

CURRENT
RESEARCH
GROUP

Swayambhoo Jain (PhD student & Graduate RA)

Xingguo Li (PhD Student & Graduate RA)

Mojtaba Kadkhodaie Elyaderani (PhD Student & Graduate RA)

Sirisha Rambhatla (MSEE 2012, PhD Student & Graduate RA)

Di Xiao (PhD Student & Graduate RA)

Alex Gutierrez (Mathematics PhD Student, pursuing MSEE)

Abhinav Sambasivan (MS Student & Graduate RA)

Jineng Ren (PhD Student)

FORMER
STUDENTS

Akshay Soni (PhD E.E. May 2015; now at *Yahoo! Research*)

Scott Sievert (B.S.E.E. May 2015; former undergraduate RA, now at *UW – Madison*)

Stephen Carnicom (B.S.E.E. December 2014; former undergraduate RA)

COURSES
TAUGHT

EE 3015: Signals and Systems, University of Minnesota
Spring 2011, Spring 2014

EE 5531: Probability and Stochastic Processes, University of Minnesota
Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2016

EE 5542: Adaptive Digital Signal Processing, University of Minnesota
Spring 2015

EE 8581: Detection and Estimation Theory, University of Minnesota
Spring 2012, Spring 2013, Spring 2016

ACADEMIC
AWARDS

DARPA Young Faculty Award *Director's Fellowship* Extension, 2016.

Best Student Paper Award – Xingguo Li (UMN ECE), *IEEE Global Conference on Signal and Information Processing*, 2015

Russell J. Penrose Excellence in Teaching Award (Inaugural), University of Minnesota ECE, 2015

Student Best Paper Award – Jeffrey Druce (UMN CEGS) with Mojtaba Kadkhodaie Elyaderani (UMN ECE) and Prof. Stefano Gonella (UMN CEGS), *International Workshop on Structural Health Monitoring*, 2015

DARPA Young Faculty Award, 2014

“Thank a Teacher” Recipient, University of Minnesota, Fall 2013

Gerald Holdridge Teaching Award (Honorable Mention), UW–Madison, 2004

Claude and Dora Richardson Distinguished Fellowship, UW–Madison, 2002

Graduated with Highest Distinction, UW–Madison, 2002

WV Distinguished Scholarship, UW–Madison, 2001

Frank D. Cady Mathematics Scholarship, UW–Madison, 2001

Mead Witter Foundation Tuition Scholarship, UW–Madison, 2001

Consolidated Papers Tuition Scholarship, UW–Madison, 2000

Ford Motor Company Scholarship, UW–Madison, 1999

Mathematics Department Scholarship Award, UW–Madison, 1999

Mathematics Award, University of Wisconsin–Marshfield/Wood Co., 1998

Valedictorian Scholarship, UW–Marshfield/Wood Co., 1996

Wisconsin Academic Excellence Tuition Scholarship, 1996

PROFESSIONAL
MEMBERSHIP

Society for Industrial and Applied Mathematics (SIAM) Member, since 2012
IEEE Member, since 2005
Phi Kappa Phi Honor Society, UW–Madison, inducted 2002
Tau Beta Pi Engineering Honor Society, UW–Madison, inducted 1999
Phi Theta Kappa Honor Society, UW–Marshfield/Wood Co., inducted 1997

REVIEWING
ACTIVITIES

IEEE Journal of Selected Topics in Signal Processing
IEEE Signal Processing Magazine
IEEE Transactions on Communications
IEEE Transactions on Information Theory
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Signal Processing
International Conference on Machine Learning (ICML)
Journal of Machine Learning Research (JMLR)
National Science Foundation (NSF) Panelist
Neural Information Processing Systems (NIPS) Conference
Optics Letters (OSA)
SIAM Journal on Imaging Sciences
Signal Processing (Elsevier)
Technical Program Committee, Statistical Signal Processing (SSP) 2012, 2016

PROFESSIONAL
EMPLOYMENT

Consultant, June 2008–August 2010
GMR Research & Technology, Concord, MA
Graduate Co-op, Summer 2006
L-3 Communications/Integrated Systems, Greenville, TX
Hardware Research & Development Intern, Summers 2004 and 2005
Cray Inc., Chippewa Falls, WI
Process Engineering Co-op, January–August 2001, Summer 2003
Georgia-Pacific/Domtar Industries, Nekoosa, WI
Water System & Service Technician, Summers 1993–2000
Haupt Well and Pump Co., Inc., Auburndale, WI