

# RICHARD G. BARANIUK

Rice University  
Departments of Electrical and Computer Engineering and Computer Science  
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April 25, 2017

## RESEARCH INTERESTS

Machine learning; signal and image processing theory and applications, sparsity and compressive sensing; open-source learning; learning analytics, personalized learning

## EDUCATION

1992	University of Illinois–Urbana	Ph.D. in Electrical and Computer Engineering
1988	University of Wisconsin–Madison	M.Sc. in Electrical and Computer Engineering
1987	University of Manitoba (Canada)	B.Sc. in Electrical Engineering (with distinction)

## POSITIONS

2012–present	OpenStax	Director/Founder
2004–present	Rice University	Victor E. Cameron Professor
2000–2004	Rice University	Professor
1999–2012	Connexions	Director/Founder
1998	Isaac Newton Institute, Cambridge University	Rosenbaum Fellow
1996–2000	Rice University	Associate Professor
1993–1996	Rice University	Assistant Professor
1992–1993	Ecole Normale Supérieure de Lyon (France)	Postdoctoral Fellow
1988–1992	University of Illinois–Urbana	Research Assistant
1987–1988	University of Wisconsin–Madison	Graduate Fellow
1987	National Research Council of Canada	Research Assistant
1986	Omron Tateishi Electronics (Kyoto, Japan)	R&D Engineer

Sabbatical 2001–2002 Ecole Nationale Supérieure de Télécommunications (Paris, France)  
Ecole Polytechnique Fédérale de Lausanne (Switzerland)

## AWARDS and HONORS

2017 Vannevar Bush Faculty Fellow (National Security Science and Engineering Faculty Fellow)  
2017 Fellow of the American Academy of Arts and Sciences  
2017 Hershel M. Rich Invention Award (Rice)  
2016 Fellow of the National Academy of Inventors  
2016 Thomson Reuters’ Highly Cited Researcher  
2016 Person of Impact, University of Wisconsin-Madison  
2016 Hershel M. Rich Invention Award (Rice)  
2015 IEEE James H. Mulligan Education Medal  
2015 IEEE Signal Processing Society Best Paper Award

- 2015 Thomson Reuters' Highly Cited Researcher
- 2015  $(T + R)^2$ : Excellence in Teaching and Research Award (Rice)
- 2014 IEEE Signal Processing Society Technical Achievement Award
- 2014 Thomson Reuters' Highly Cited Researcher
- 2014 Presidential Mentoring Award (Rice)
- 2012 SPIE Compressive Sampling Pioneer Award
- 2011 WISE Education Award for Connexions (Qatar Foundation)
- 2011 Padovani Lecture, IEEE Information Theory Society
- 2010 IEEE Signal Processing Society Education Award
- 2009 Fellow of the American Association for the Advancement of Science (AAAS)
- 2009 IEEE Signal Processing Society Magazine Column Award
- 2009 World Technology Award for Education
- 2008 Internet Pioneer Award, Berkman Center for Internet and Society at Harvard Law School
- 2008 SPIE Wavelet Pioneer Award
- 2007 Edutopia Magazine's "Daring Dozen" Education Innovators
- 2007 MIT Technology Review TR10 Top 10 Emerging Technology for the Rice Single-Pixel Camera
- 2007 Hershel M. Rich Invention Award (Rice)
- 2006 Tech Museum of Innovation Laureate for Connexions
- 2006 George R. Brown Award for Superior Teaching (Rice)
- 2003 Co-Author on Passive and Active Measurement Workshop Student Paper Award  
(with V. Ribeiro, R. Riedi, J. Navratil, and L. Cottrell)
- 2003 George R. Brown Award for Superior Teaching (Rice)
- 2002 Fellow of the Institute of Electrical and Electronic Engineers (IEEE)
- 2001 Co-Author on IEEE Signal Processing Society Junior Paper Award (with M. Crouse and R. Nowak)
- 2001 IEEE NORSIG Best Paper Award (with E. Monsen, J. Odegard, H. Choi, J. Romberg)
- 2001 George R. Brown Award for Superior Teaching (Rice)
- 2000 University of Illinois ECE Young Alumni Achievement Award
- 2000 Charles Duncan Junior Faculty Achievement Award (Rice)
- 1999 C. Holmes MacDonald National Outstanding Teaching Award (Eta Kappa Nu)
- 1998 Rosenbaum Fellowship, Isaac Newton Institute (Cambridge University)
- 1995 ONR Young Investigator Award
- 1994 NSF National Young Investigator Award
- 1992 National Sciences and Engineering Research Council of Canada NATO Postdoctoral  
Fellowship
- 1987 Wisconsin Alumni Research Foundation Fellowship  
Bacon Scholarship (U. Wisconsin)  
Eta Kappa Nu Award for Second-Ranked Graduating Electrical Engineer (U. Manitoba)  
IEEE Award for Best Undergraduate Thesis Defense (U. Manitoba)
- 1986 E. P. Fetherstonhaugh Scholarship (U. Manitoba)
- 1977 Top Project at the University of Winnipeg Science Symposium (Provincial Science Fair)

## **PRESS**

2006–present on Compressive Sensing and the Single-Pixel Camera: *MIT Technology Review TR10 Emerging Technologies for 2007*, *The Economist*, *Business Week*, *Scientific American*, *Nature Photonics*, *BBC News*, *BBC Digital Planet*, *MIT Technology Review (twice)*, *USA Today*, *The Times*, *The Guardian*, *SIAM Review*, *EE Times*, *New Scientist (twice)*, *IEEE Signal Processing Magazine*, *IEEE Spectrum*, *La Recherche (France)*, *MSN.com*, *TechRadar*, *Mechanical Engineering Magazine*, *Eco-*

omic Times (India), NAE Radio Series on Engineering, Houston Chronicle, Washington Post, Slash-dot (twice), Digital Camera Info, Cellular News

2003–present on Connexions: *Wall Street Journal*, *New York Times* (five times), *BusinessWeek*, *CNN.com*, *Nature*, *Newsweek*, *The Chronicle of Higher Education* (six times), *Inside Higher Ed* (eleven times), *Scientific American*, *Times Higher Education*, *Financial Times Higher Education (FHE)*, *US News and World Report*, *Forbes* (three times), *Washington Post*, *Wired* (twice), *The Guardian*, *Le Monde*, *International Herald Tribune*, *ASEE Prism* (twice), *eSchool News* (twice), *Campus Technology*, *San Francisco Chronicle*, *San Jose Mercury News*, *Los Angeles Times* (twice), *Ottawa Citizen*, *Edu-topia* (twice), *The Book Standard*, *Wired News*, *Campus Technology* (twice), *The TakeAway* (BBC, NY Times, WGBH), *SURF* (Netherlands), *EducationViews*, *Linux Insider*, *Linux Electrons*, *Houston Chronicle* (twice), *Houston Business Journal*, *KIKK Radio* (CNN), featured on Intel’s “What’s Inside You?” website; for a complete listing see [cnx.org/aboutus/inthenews](http://cnx.org/aboutus/inthenews)

2008 on the Cape Town Declaration on Open Education: *San Francisco Chronicle*, *Inside Higher Ed*, *The Chronicle of Higher Education*, *Newsweek*, *eSchool News*, *Mlada Fronta Dnes* (Czech Republic), *Die Welt* (Germany), *Kerdos* (Greece), *Diena* (Latvia), *Kronika* (Romania), *Vedomosti* (Russia), *El Pais* (Spain), *Tagesanzeiger* (Switzerland), *L’Agefi* (Switzerland), *Norgesuniversitetet* (Norway), *Today’s Zaman* (Turkey), *Clarín* (Argentina), *Los Tiepos* (Bolivia), *Valor* (Brazil), *TioSam* (Brazil), *La Tercera* (Chile), *El Tiempo* (Colombia), *Stabroek News* (Guyana), *El Universal* (Nicaragua), *El Neuvo Diario* (Nicaragua), *La Prensa* (Panama), *The Australian* (Australia), *South China Morning Post* (Hong Kong), *The Nation* (Thailand), *The Japan Times* (Japan), *The Korean Herald* (Korea), *Macau Daily Times* (Macau), *The Press* (New Zealand), *The Timaru Herald* (New Zealand), *Daily Times* (Pakistan), *Daily Enquirer* (Philippines), *Taipei Times* (Taiwan), *The Nation* (Thailand), *Al Jarida* (Kuwait), *Al Arab* (Qatar), *Le Quotodien d’Oran* (Algeria), *Mmegi* (Botswana), *Daily Star* (Egypt), *Les Nouvelles* (Madagascar), *Les Echos* (Mali), *Standard Times* (Sierra Leone)

2012–present on OpenStax College: *New York Times*, *Forbes*, *TIME*, *Chronicle of Higher Education* (three times), *Inside Higher Education* (five times), *Publishers Weekly*, *Campus Technology*, *San Jose Mercury News*, *Information Weekly*, *Kiplinger Finance*, *University Business*, *Voice of America News*, *KUHF*

## RESEARCH SUPPORT

2017–2022	DOD	Vannevar Bush Faculty Fellow (National Security Science and Engineering Faculty Fellow)	
2016–2019	NSF	Operationalizing Students’ Textbook Annotations to Improve Comprehension and Long-Term Retention	(co-PI)
2016–2020	IARPA	MICrONS: Reverse Engineering Neocortical Intelligence	(co-PI)
2016–2020	DARPA	OMNISCIENT (REVEAL Program)	(co-PI)
2016–2017	IBM	Open Collaborative Research Award	
2016–2017	Texas Education Agency	Advanced Placement OpenStax Textbook Development	
2016–2017	Beneficus Foundation	OpenStax Tutor V2	
2016–2017	Maxfield Foundation	OpenStax Tutor V2	
2016–2017	Sick Foundation	OpenStax Tutor V2	
2016–2017	Katalyst Foundation	OpenStax Internationalization	

2016	Hewlett Foundation	<i>OpenStax Community Outreach</i>	
2015–2018	ARO	<i>Information Processing and Fusion via Sparse Factorization</i>	
2015–2018	NSF	<i>Lens-Free Imaging: Can Signal Processing Replace Lenses?</i>	
2015–2018	AFOSR	<i>Sparse Factor Analysis for Information Extraction and Fusion</i>	
2015–2017	ONR	<i>(NCoM) Nanophotonic Compressive iMaging: On-chip Compressive Lensless, Light-field and Hyper-spectral Sensors</i>	
2015–2016	NSF	<i>EAGER: Fabrication of Thin, Lens-Free Cameras for Visible and SWIR Imaging</i>	(co-PI)
2015–2016	NGA	<i>Fast Algorithms for Sparsity, Dictionary Learning and Detection from Compressed Data</i>	(co-PI)
2014–2017	Bill and Melinda Gates Foundation	<i>OpenStax Courseware</i>	
2014–2016	Laura and John Arnold Foundation	<i>OpenStax Tutor Prototype</i>	
2014–2016	AFOSR	<i>Millimeter-Wave Hyper-Spectral Three-Dimensional Imaging using Coherent Sub-Picosecond Pulses</i>	(co-PI)
2013–2016	ONR	<i>Image Optimization for Small Focal Plane Arrays</i>	(co-PI)
2013–2015	Beneficus Foundation	<i>OpenStax College Phase 3</i>	
2013–2015	Laura and John Arnold Foundation	<i>OpenStax College Phase 3</i>	
2013–2014	Hewlett Foundation	<i>OpenStax College Phase 3</i>	
2013–2014	Laura and John Arnold Foundation	<i>OpenStax College Phase 2</i>	
2012–2013	Hewlett Foundation	<i>OpenStax College Phase 2</i>	
2012–2013	Hewlett Foundation	<i>Connexions Platform Redesign</i>	
2012–2013	Open Society Foundations	<i>Connexions Platform Redesign</i>	
2012–2013	Google	<i>Connexions Platform Redesign</i>	
2012–2014	ONR	<i>Image Feature Articulation Manifolds for Advanced Situational Awareness</i>	
2012–2013	ONR	<i>DURIP: Semiconductor Implementation of Compressive Data Acquisition Systems</i>	(co-PI)
2011–2015	NSF	<i>A Personalized Cyberlearning System Based on Cognitive Science</i>	
2011–2014	ONR	<i>Compressive Sensing for Image Understanding: Human Activity Analysis</i>	(co-PI)
2011–2014	TI	<i>Texas Instruments Leadership University Program</i>	(co-PI)
2011–2014	ONR	<i>Mathematics of Low-Dimensional Representations for Design (Basic Research Challenge)</i>	(co-PI)
2011–2014	NSF	<i>Computational Tools for Visual Inference of Complex Materials</i>	(co-PI)
2011–2014	ONR	<i>Compressive Sensing for Image Understanding</i>	
2011–2013	Hewlett Foundation	<i>OpenStax College Phase 1</i>	
2011–2013	Gates Foundation	<i>OpenStax College Phase 1</i>	

2011–2013	20MM Foundation	<i>OpenStax College Phase 1</i>	
2011–2012	Google	<i>Personalized Learning via Machine Learning</i>	
2010–2014	ONR	<i>Biologically-Inspired Routes to Sense-and-Response in Adaptive, Intelligent Metamaterials (Basic Research Challenge)</i>	(co-PI)
2010–2014	NSF	<i>CI-TEAM: The Signal Processing Education Network</i>	
2010–2014	DARPA	<i>Knowledge-Enhanced Compressive Active Radar Arrays</i>	(co-PI)
2010–2014	DARPA	<i>Knowledge Enhanced Compressive Measurement</i>	(co-PI)
2010–2011	LLNL	<i>New Compression Techniques for High-Resolution Airborne Sensors</i>	
2010–2011	NGA	<i>Multiscale Compression of Point Cloud Data</i>	
2009–2014	ARO	<i>MURI: Opportunistic Sensing for Object and Activity Recognition from Multi-Modal, Multi-Platform Data (Project Director)</i>	
2009–2014	NSF	<i>Expeditions in Computing: Customizable Domain-Specific Computing</i>	(co-PI)
2009–2012	AFOSR	<i>New Theory and Algorithms for Scalable Data Fusion</i>	
2009–2010	ONR	<i>Compressive Video Acquisition, Fusion, and Processing</i>	
2008–2011	DARPA	<i>Information Scalable Analog-to-Information Receivers</i>	
2008–2010	Hewlett Foundation	<i>Connexions Project Core Support</i>	(co-PI)
2008–2012	ONR	<i>Theory and Methods for Model-Based Compressive Sensing</i>	
2008–2011	TI	<i>Texas Instruments Leadership University Program</i>	(co-PI)
2008–2009	ONR	<i>Efficient Collaborative Inference in Networks of Sensors</i>	
2008–2009	ONR	<i>Compressive Imaging via Randomized Multiplexing</i>	
2008–2009	ONR	<i>DURIP: Multidimensional Compressive Data Acquisition System</i>	
2007–2008	Hewlett Foundation	<i>Connexions Project Bridge Support</i>	
2007–2010	NSF	<i>Collaborative Research: Design and Analysis of Compressed Sensing DNA Microarrays</i>	(co-PI)
2007–2010	ARO	<i>MURI: Model Classes, Approximation, and Metrics for Dynamic Processing of Urban Terrain Data</i>	(co-PI)
2007–2010	ONR	<i>Universal Sensing and Processing using Compressive Sensing</i>	
2007–2010	AFOSR	<i>Compressive Signal Processing</i>	
2006–2007	Hewlett Foundation	<i>Connexions Project Core Support</i>	
2006–2009	NSF	<i>Building Communities and Sharing Knowledge in Engineering Education: A University/Industry Partnership (with National Instruments)</i>	(co-PI)
2006–2007	TI	<i>Compressive Sensing for Vision Applications</i>	
2006–2007	ONR	<i>New Theory and Algorithms for Compressive Sensing</i>	
2006–2007	ONR	<i>Manifold-based Image Understanding</i>	
2006–2007	DARPA	<i>Compressive Optical Imaging Systems — Theory, Devices, and</i>	

*Implementation*

2006–2007	DARPA	<i>Theory and Practice of Analog-to-Information Conversion</i>	
2005–2008	NSF	<i>Adaptivity in Sensor Networks for Optimized Distributed Sensing and Signal Processing</i>	
2005–2008	ONR	<i>Higher-Dimensional Signal Processing via Multiscale Geometric Analysis</i>	
2005–2008	AFRL	<i>Multisensor Registration via Multiscale Geometric Analysis (co-PI)</i>	
2004–2007	NSF	<i>Multiscale Geometric Analysis for Higher-Dimensional Signal Processing</i>	
2004–2007	NSF	<i>Multiscale Sensor Network Architecture for Distributed Data Processing</i>	
2004–2006	Hewlett Foundation	<i>Connexions – Sharing Knowledge and Building Communities</i>	
2004–2007	AFOSR	<i>Multiscale Analysis, Modeling, and Processing of High-Dimensional Geometric Data</i>	
2004	NSF	<i>WAMA 2004: Wavelets And Multifractal Analysis Workshop (workshop support)</i>	
2003–2006	NSF	<i>Safari: A Scalable Architecture for Ad Hoc Networking and Services</i>	(co-PI)
2002–2004	DARPA	<i>Integrated Sensing and Processing in Missile Systems (with Raytheon)</i>	
2002–2004	Hewlett Foundation	<i>Connexions – Education for a Networked World</i>	
1999–2004	TI	<i>Texas Instruments Leadership University Program</i>	(co-PI)
2002–2004	ONR	<i>Coherent Multiscale Statistical Modeling using Complex Wavelets</i>	
2001–2004	DOE	<i>INCITE: Edge-based Traffic Processing and Service Inference for High-Performance Networks</i>	
2001–2004	NSF	<i>Internet Control and Inference from the Edge</i>	(co-PI)
2000–2004	DARPA	<i>Multiscale Traffic Processing Techniques for Network Inference and Control</i>	
2001–2003	AFOSR	<i>Multiscale Statistical Models for Signal and Image Processing</i>	
1999–2001	Nokia	<i>Development of a High-Speed Wireless LAN</i>	(co-PI)
1999–2001	Texas	<i>High-Speed Wireless Local Area Network</i>	(co-PI)
1999–2002	NSF	<i>Wireless Technology: Seamless Multitier Wireless Networks for Multimedia Applications</i>	(co-PI)
1999–2002	NSF	<i>Multiscale Signal and Image Processing using Singularity Grammars</i>	
1999–2001	ONR	<i>Model-based Multiscale Signal and Image Processing</i>	
1999	NSF	<i>Acquisition of a High Performance Computer System for the Center for Computational Geophysics</i>	(co-PI)
1998–2000		<i>Rice Consortium for Computational Seismic Interpretation</i> Sponsors: Amerada-Hess, Arco, Conoco, Elf Aquitaine, Halliburton, Mobil, Schlumberger	
1998–2001	EPA	<i>Development of a New Gas Sensing System based on Terahertz</i>	

		<i>Time-Domain Spectroscopy</i>	(co-PI)
1997–2000	DARPA	<i>Wavelet-based Detection Algorithms for ATD/R</i>	(co-PI)
1996	NSF	<i>CISE Research Instrumentation: A Medium Scale, Tightly Coupled, Shared Memory Multiprocessor</i>	(co-PI)
1995–1998	ONR	<i>Operator-Based Approaches for Matching Signal Processing Tools to Data</i> (Young Investigator Award)	
1994–2000	NSF	<i>Signal Analysis and Processing in Matched Coordinate Systems</i> (National Young Investigator Award)	
1995–1997	NATO	<i>Information Theoretic Time-Frequency and Time-Scale Signal Analysis</i>	
1994–1996	Texas	<i>New Data Compression Technology based on Time-Varying Wavelets</i>	

Industrial sponsors have included: Texas Instruments, National Instruments, Nokia, Nortel, SBC Raytheon, Northrop-Grumman, Shell Research, Conoco-Phillips Exxon, Mobil, Arco, Elf Aquitaine, Amerada Hess, Schlumberger

## STUDENTS

Postdocs: Gautam Dasarathy (University of Wisconsin–Madison)  
AmirAli Aghazadeh (Rice University)

MS/PhD students: Randall Balestrieri, CJ Barberan (NDSEG Fellow, NSF Fellow, GEM Fellow, Intel Foundation Fellow), Jeff Lievens, Robin Liu (Computer Science), Indu Manickam, Christopher Metzler (NDSEG and NSF Graduate Fellow), Joshua Michalenko (NSF Graduate Fellow Honorable Mention), Ali Mousavi (Schlumberger Graduate Fellow), Tan Minh Nguyen (NSF IGERT Fellow, NSF Graduate Fellow), Jasper Tan

Postdoc alums: Salman Asif (Asst. Prof., University of California, Riverside) 2014–2016  
Ankit Patel (Asst. Prof., Baylor College of Medicine) 2013–2015  
Phillip Grimaldi (Research Director at OpenStax) 2013–2015  
Eric Chi (Asst. Prof., North Carolina State University) 2013–2015  
Mohammad Golbabaee (Postdoc, University of Edinburgh) 2013–2015  
Divyanshu Vats (Two Sigma, New York) 2012–2014  
Tom Goldstein (Asst. Prof., University of Maryland, Sloan Fellow) 2012–2014  
Jianing Shi (Varian Medical Systems) 2011–2013  
Christoph Studer (Asst. Prof., Cornell) 2011–2013  
Aswin Sankaranarayanan (Asst. Prof., CMU) 2009–2012  
Arian Maleki (Asst. Prof., Columbia University) 2010–2012  
Jarvis Haupt (Asst. Prof., U. Minnesota, DARPA Young Faculty Award) 2009–2010  
Volkan Cevher (Asst. Prof., EPFL) 2007–2009  
Petros Boufounos (Mitsubishi Electric Research Lab, MERL) 2006–2008  
Christopher Rozell (Assoc. Prof., Georgia Institute of Technology, NSF CAREER Award, Sigma Xi Young Faculty Research Award) 2006  
Dror Baron (Assoc. Prof., NCSU) 2003–2006  
Veronique Delouille (Royal Observatory of Belgium) 2003–2004  
Rutger van Spaendonck (Shell Research, Netherlands) 2002–2003

Xin Wang (Bell Labs) 2001–2002  
 Maarten Jansen (Assoc. Prof., Tech. Universit Libre de Bruxelles, Belgium) 2000–2001  
 Vidya Venkatachalam (MathSoft, Seattle) 2000  
 Mark Coates (Assoc. Prof., McGill University) 1999–2002  
 Hyeokho Choi (Asst. Prof., North Carolina State University) 1998–2000  
 Ivan Magrin-Chagnolleau (INRIA, Lyon, France) 1998–1999  
 Rolf Riedi (Assoc. Prof. of Statistics, Rice, now Professor at U. Applied Sciences of Western Switzerland) 1997–1999  
 Philippe Steeghs (TNO, Netherlands) 1997–1999  
 Jan Odegard (Executive Director, K2I, Rice) 1996–1997  
 Robert Nowak (McFarland-Bascom Professor, University of Wisconsin, NSF CAREER Award, ARO YIP Award, ONR YIP Award, IEEE Baker Paper Award, IEEE SPS Young Author Best Paper Award, IEEE SPS Best Paper Award, ASPRS Talbert Abrams Paper Award, GE Genius of Invention Award, IEEE Fellow) 1995–1996  
 Paulo Gonçalves (Director de Recherche, Ecole Normale Supérieure, Lyon, France) 1994–1996

PhD student  
 alums:

Andrew Lan (2016, now postdoc at Princeton University)  
 Eva Dyer (2014, NSF Graduate Fellow, postdoc at Northwestern University, now Asst. Prof. at Georgia Tech)  
 Andrew Waters (2014, Harrianna Butler Award, now at OpenStax)  
 Chinmay Hegde (2012, Budd award for best engineering thesis, postdoc at MIT, now Asst. Prof. at Iowa State University, NSF CISE Research Initiation Initiative (CRII) Award)  
 Jason Laska (2012, Herschel Rich Invention Award, now at Dropcam/Nest)  
 Mona Sheikh (2010, now postdoc at Whitehead Institute for Biomedical Research, MIT)  
 Mark Davenport, (2010, Hershel Rich Invention Award, Budd award for best engineering thesis, NSF Math Sciences postdoc fellow at Stanford, now Assoc. Prof. at Georgia Tech, NSF CAREER Award, AFOSR YIP Award, Sloan Fellow)  
 Marco Duarte (2009, Hershel Rich Invention Award, NSF IPAM postdoc fellow at Princeton/Duke, now Asst. Prof. at U. Mass-Amherst)  
 Shriram Sarvotham (2008, now at Apple)  
 Raymond Wagner (2007, now at NASA Johnson Space Center)  
 Michael Wakin (2006, NSF Graduate Fellow, Hershel Rich Invention Award, NSF Math Sciences postdoc fellow at Caltech, Asst. Prof. at U. Michigan, now Assoc. Prof. at Colorado School of Mines, NSF CAREER Award, DARPA Young Faculty Award)  
 Vinay Ribeiro (2005, now Assoc. Prof. at IIT-Delhi)  
 Nadeem Ahmed (2004, now VP at AxilPartners)  
 Justin Romberg (2003, now Assoc. Prof. at Georgia Tech, ONR YIP, PECASE, Packard Fellowship, Rice Outstanding Young Engineering Alumnus)  
 Ramesh Neelamani (2003, now at ExxonMobil Research, SEG Karcher Award)  
 Tim Dorney (2001, now at Texas Instruments)  
 Rohit Gaikwad (2000, Herschel Rich Invention Award, Budd award for best engineering thesis, now Broadcom Fellow)  
 Roger Claypoole (1999, Prof. at Air Force Institute of Technology, now at TASC)  
 Matthew Crouse (1999, Budd award for best engineering thesis, IEEE Signal Processing Society Best Student Paper Award, now hedge fund manager)



MS student alums: Dante Soares (2014, now at OpenStax)  
Stephen Schnelle (2011, NSF and NDSEG Graduate Fellow, now at Northrop-Grumman)  
Sriram Nagaraj (2011, now at Indian Institute of Sciences)  
Manjari Narayan (2011, Google Anita Borg Scholarship)  
Ryan King (2007, now at WesternGeco)  
William Chan (2006, now at CGGVeritas)  
Shridar Lavu (2004, now at NVIDIA)  
Brent Hendricks (2000, Systems Architect, Connexions, Rice)  
Metin Bayram (1996, now at TrellisWare)

Undergrad alums: Venkat Chandrasekaran (2005, PhD from MIT, postdoc at UC-Berkeley, now Asst. Prof. at Caltech)  
Laura Balzano (2002, PhD from U. Wisconsin, now Asst. Prof. at U. Michigan)  
Shannon Hughes (1999, PhD from Princeton, now Asst. Prof. at UC-Boulder)  
Maya Gupta (1997, PhD from Stanford, now Assoc. Prof. at U. Washington, NSF Graduate Fellow, ONR Young Investigator Award, PECASE Award)

External theses: Suman Maji (University of Bordeaux, France)  
Graeme Pope (ETH, Switzerland)  
Yaser Eftekhari (Carleton, Canada)  
Mohammad Golbabaee (EPFL, Switzerland)  
Ali Hormati (EPFL, Switzerland)  
Vladan Velisavljevic (EPFL, Switzerland)  
Felix Friedrich (Technical Universitat Munchen, Germany)  
Rosa Figueras Ventura (EPFL, Switzerland)  
James Carson (Baylor College of Medicine)  
Antoine Roueff (Ecole Nationale Supérieure d'Ingénieurs Electriciens, Grenoble)  
Pier Luigi Dragotti (EPFL, Switzerland)  
Minh Do (EPFL, Switzerland)  
Pierre Chenais (ENS-Lyon, France)  
Rutger van Spaendonck (Delft University of Technology, Netherlands)  
Eric Chassande-Motin (ENS-Lyon, France)  
Philippe Steeghs (Delft University of Technology, Netherlands)  
Dominique Devedeux (Université de Technologie de Compiègne, France)

## ACTIVITIES OUTSIDE RICE UNIVERSITY

Editorial Board: *Applied and Computational Harmonic Analysis* (1999–present)  
*IEEE Journal of Selected Topics in Signal Processing* (2011–2014)  
*ACM Transactions on Sensor Networks* (2006–2010)

Advisory Board: Duke University ECE External Advisory Board

Planning Committee: Center for Neuroengineering (Rice, BCM, UTHSC-H, UH)

Guest Editor: *IEEE Journal of Selected Topics in Signal Processing*, special issue on Signal Processing and Machine Learning for Education and Human Learning at Scale, 2016  
*IEEE Signal Processing Magazine* special issue on Computational Photography and Displays, 2016  
*Proceedings of the IEEE* special issue on Sparsity in Signal Processing, 2009

*IEEE Journal of Selected Topics in Signal Processing* special issue on Compressive Sensing, 2009  
*IEEE Signal Processing Magazine* special issue on Compressive Sampling, 2008 (lead)  
*Proceedings of the IEEE* special issue on Educational Technology, 2008  
*IEEE Signal Processing Magazine* special issue on Signal Processing in Networking, 2002

Co-organizer: NIPS Workshop on *Machine Learning for Education*, 2016  
ICML Workshop on *Machine Learning for Digital Education and Assessment*, 2016  
ICML Workshop on *Machine Learning for Education*, 2015  
IPAM Workshop on *Computational Photography and Intelligent Cameras*, 2015  
NIPS Workshop on *Human Propelled Machine Learning*, 2014  
IMA Workshop on *High Dimensional Phenomena*, 2011  
Invited session on *Signal Processing* at First EU-US Frontiers of Engineering Symposium (NAE), 2010  
NIPS Workshop on *Manifolds, Sparsity, and Structured Models: When Can Low-Dimensional Geometry Really Help?*, 2009  
IPAM Workshop on *Mathematical Challenges and Opportunities in Sensor Networking*, 2007  
*Wavelet And Multifractal Analysis Summer School (WAMA)*, Institut d'Études Scientifiques de Cargèse, Corsica, France, 2004  
*Knowledge Held Hostage — Fair Use and IP Workshop*, 2004  
Numerous special sessions at ICASSP, ICIP, SPIE, Asilomar

Program Committee: *ACM/SIGKDD Conf. on Knowledge Discovery and Data Mining (KDD)*, 2017  
*Conference on Neural Information Processing Systems (NIPS)*, 2016  
*SIAM Imaging Science Conference*, Compressive Imaging Workshop, 2016  
*International Conference on Machine Learning (ICML)*, 2015  
*IEEE International Conference on Computational Photography (ICCP)*, 2015  
*European Conference on Computer Vision (ECCV)*, 2014  
*NATO SET-213 Specialist Meeting on Compressive Sensing for Radar and IR Imaging*, 2014  
*SPARC Open Access Meeting*, 2014  
*SPARS*, 2013, 2015  
*IEEE International Symposium on Information Theory (ISIT)*, 2012, 2009  
*AAAI Symposium on Manifold Learning and its Applications*, 2010  
*SPIE Photonics West Conference on Emerging DLP Chip-Based Systems and Applications*, 2008  
Co-Technical Program Chair, *IEEE Statistical Signal Processing Workshop*, Madison, 2007  
*Information Processing in Sensor Networks (IPSN)*, 2005, 2006, 2008  
*SPIE Conference on Intelligent Integrated Microsystems*, 2006  
*International Conference on Mathematical Knowledge Management*, 2005  
*International Conference on Computational Harmonic Analysis*, 2004  
*SPIE Wavelet Applications in Signal and Image Processing Annual Conference*, 1998–2008  
*IEEE-SP International Symposium on Time-Frequency and Time-Scale Analysis*, 1998

Chair: IEEE Signal Processing Society, Houston Chapter, 1994–2015

Member: IEEE Signal Processing Society Education Technical Committee, 2010–2014  
 Lensing Oversight Committee for IEEE Signal Processing Society / Connexions joint project, 2007–2009  
 UNESCO Consultative Committee on Open Educational Resources, 2007  
 IEEE Signal Processing Society Technical Committee on Signal Processing Theory and Methods, 1998–2004  
 Jury, Eta Kappa Nu C. Holmes MacDonald Outstanding Teaching Award, 2004

Gov't panels: DOE Technical Working Group, Higher Education National Educational Technology Plan (HE-NETP), 2016  
 NOAA Science Advisory Board, 2015  
 White House Symposium on Innovation in Higher Education, 2014  
 Irish National Academy for Integration of Research, Teaching and Learning (NAIRTL) International Advisory Board, 2010–present  
 DARPA Information Science And Technology Study Group (ISAT), 2008–2011  
 State of Washington House Higher Education Committee on Open Textbooks, 2009  
 Open Education Subcommittee of the Virginia Joint Commission on Science and Technology, 2008  
 Advisory Committee on Student Financial Assistance, US Congress, 2007

Invited Participant: National Academies Keck Futures Initiative (NAKFI) Conference on *The Informed Brain in a Digital World*, 2012  
 Atlantic Magazine *Washington Ideas Forum* Working Summit on America's Culture of Innovation, 2010  
 Cape Town Declaration Framing Workshop, South Africa, 2007  
 European Commission Workshop on *Knowledge Anywhere Anytime*, 2004  
 NAE Workshop on *IT-Enabled Educational Materials*, 2002  
 Numerous NSF review panels

Reviewer: *Science, Nature, PNAS, Various IEEE Transactions, etc.*

## ACTIVITIES WITHIN RICE UNIVERSITY

2017 Founder, ML@RICE workshop

2016–present Data Science Programming and Search Committee

2015–present Digital Education Advisory Committee

2015 K2I Internal Review Committee

2014–2015 Faculty Search Committee, Computer Science

2013–2014 Organizing Committee for 2014 Delange Conference on *Teaching in the Research University of Tomorrow*

2013–present Personalized Learning Workshop (Founder, Co-Organizer)

2011–present Member of Scientia

2010 Organizing Committee for 2012 Delange Conference on *The Future of the Research University in a Global Setting*

2009–present Rice Center for Engineering Leadership (RCEL), Internal Advisory Committee

2008–2012 Co-Chair, ECE Faculty Search Committee

2006–present Chair, Texas Instruments Visiting Professor Committee

2004–2008 ECE Industrial Affiliates Committee

2004–2008	Cain Project Faculty Advisory Committee
2000	Rice Web Steering Committee
2000	Committee on the Digital Environment at Rice
1999	<i>DSP30 Celebration</i> Organization Committee (Chair)
1997	Dean’s Committee on Departmental Structure
1996–2004	Chair, ECE Graduate Committee
1996–present	Texas Instruments Graduate Fellowship Committee
1996–2000	University Committee on Admission and Student Financial Aid
1994–2008	KTRU Radio DJ
1994–2008	Faculty Associate and Divisional Advisor, Hanszen College (Outstanding Associate 1995–1997)
1994–1996	ECE Graduate Committee
1994–1996	IEEE Student Branch Faculty Advisor
1994–1995	Faculty Mentor, Minority Student and “Posse” Programs
1993–1994	ECE Curriculum Committee
1993–present	ECE Graduate Committee

## TEACHING

ELEC 475/575	Learning from Sensor Data
ELEC 301x	Discrete Time Signals and Systems (MOOC developed for edX, 2014)
ELEC 301	Signals and Systems
ELEC 431	Digital Signal Processing (developed)
ELEC 532	Spectral Analysis (developed)
ELEC 539	Image Processing
ELEC 631	Advanced Digital Signal Processing: Wavelets, Graphical Models, Compressive Sensing Manifolds in Signal Processing, Document Analysis, Reinforcement Learning
Instructor:	Dean’s Teaching Workshop for New Faculty/TAs, 1997–2001, 2004–2007 James Baker Society, 2004 School of Continuing Studies, 2004, 2007, 2008 Alumni College, 1999 Science Academy of South Texas, 1999

## PRESENTATIONS

### Keynote and Plenary Lectures

- 2017 “Sparse Signal Processing,” *Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*, Houston, October 2017
- “A Probabilistic Theory of Deep Learning,” *National Conference on Communications (NCC)*, Madras, India, March 2017.
- “Cape Town+10 Keynote Panel,” *OpenEd Global*, Cape Town, South Africa, March 2017.
- “A Probabilistic Theory of Deep Learning,” *Coordinated Science Laboratory Student Conference*, University of Illinois at Urbana-Champaign, February 2017.
- 2016 “OpenStax: An Open Education Case Study,” *Education 20/20: Innovative Teaching and Learning at a Distance*, University of Houston, November 2016

- “Going off the Deep End with Deep Learning,” *ExxonMobil Cognitive Computing Conference*, March 2016
- “Computational Nonsensing,” *Conference on Computational Imaging and Vision (CIV)*, KAUST, Saudi Arabia, March 2016
- 2015 “A Probabilistic Theory of Deep Learning,” *Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Cancun, Mexico, December 2015
- “Personalized Education,” *Xconomy Houston 2035*, May 2015
- “Progress on Sparse Signal Processing,” *Sampling Theory and Applications (SampTA)*, Washington, DC, May 2015
- “Scaling Up Quality Education,” *Blended Learning in the Liberal Arts Conference*, Bryn Mawr College, May 2015
- “Open Education: Challenges and Opportunities in Signal Processing,” *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Brisbane, Australia, April 2015
- “Compressive Nonsensing,” Norbert Wiener Colloquium, Department of Mathematics, University of Maryland, College Park, February 2015
- 2014 “Open Education - A Disruptive Force in Education,” *UBTech*, Las Vegas, July 2014
- “Compressive Nonsensing,” *ATO SET-213 Specialist Meeting on Compressive Sensing for Radar/SAR and EO/IR Imaging*, Tallinn, Estonia, May 2014
- “Sparse Signal Processing,” *Technion Computer Engineering (TCE) Center Conference*, Technion, Haifa, Israel, May 2014
- “Open Source = Open to You: Online Publishing,” 10th Annual Innovations in Health Science Education, Austin, February 2014
- “OpenStax College — Modern Textbooks,” Panel on The Next Edition of Digital Textbooks and Courseware, TransformingEDU Summit, *Consumer Electronics Show*, Las Vegas, January 2014
- “Keypoint Articulation Manifolds for Image Analysis in High Dimensions,” *French-German Conference on Mathematical Image Analysis*, Paris, France, January 2014
- 2013 “Video Compressive Sensing,” *Matheon Workshop on Compressed Sensing and its Applications*, Berlin, December 2013
- “Learning Near-Isometric Linear Embeddings,” *IEEE GlobalSIP*, Austin, TX, December 2013
- “Intellectual Infrastructure for Lifelong Learning,” *OKMD Knowledge Festival*, Bangkok, Thailand, December 2013
- “Open E-Courses: New Ways to Develop and Share,” *11th Seminar on E-Learning*, King Khalid University, Abha, Saudi Arabia, October 2013
- “A Perfect Storm for Open Education,” *UW Annual Conference on Distance Teaching and Education*, University of Wisconsin, August 2013
- “Learning Near-Isometric Linear Embeddings,” *SPARS Workshop*, EPFL, Lausanne, Switzerland, July 2013
- “Personalized Learning Systems — Worthy of the Hype?” *SXSWedu*, Austin, TX, March 2013
- “Video Compressive Sensing,” *BASP Frontiers Workshop*, Switzerland, January 2013

- 2012 “Disruptive Innovation via Open Educational Resources,” Distinguished Lecture, Department of Electrical and Computer Engineering, Duke University, November 2012
- “A Perfect Storm for Open Education,” Telefonica TIC Forum, Santiago, Chile, November 2012
- “Compressive Sensing: 8 Years Later,” *46th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2012
- “A Perfect Storm for Open Education,” *FLASH Annual Conference*, Orlando, November 2012
- “A Perfect Storm for Open Education,” *Frontiers of Engineering Education*, National Academy of Engineering, Irvine, CA, October 2012
- “Optimization based Sparse Signal Recovery,” *21st International Symposium on Mathematical Programming (ISMP 2012)*, Berlin, August 2012
- “Compressive Signal Processing,” *Center for Advanced Signal and Image Science (CASIS) Workshop*, Lawrence Livermore National Laboratory, May 2012
- “Compressive Signal Processing,” *Mohammed Dahleh Distinguished Lecture*, UCSB, May 2012
- “Open Education: A Disruptive Force in Education,” *California Community College Association for Occupational Education (CCCAOE) Spring Conference*, San Francisco, March 2012
- 2011 “Open Technology / Open Education,” *IASTED International Conference on Technology and Education (TE 2011)*, Dallas
- “Open Source Education,” *Pearson Technology Summit*, Denver
- “The Open Education (R)Evolution,” National Council for Workforce Education and National Council for Continuing Education and Training joint summit on *Growing the Workforce for a New American Economy*, St. Louis
- “Randomized Dimensionality Reduction and Compressive Sampling,” Padovani Lecture, *Information Theory School*, IEEE Information Theory Society
- “Compressive Sensing and Signal Processing,” *University of Delaware Distinguished Lecture Series*
- “The Past, Present, and Future of Open Education Resources: Implications for Campus Stores” *Campus Market Expo (CAMEX)*, Houston
- “Open Education: Past, Progress, and Challenges,” *EDUCAUSE Learning Initiative Conference*, Washington, DC
- 2010 “The Open Education Revolution,” *Irish National Academy for Integration of Research, Teaching and Learning (NAIRTL) and Learning Innovation Network (LIN) joint annual conference*, Dublin
- “Open Education: A New Avenue for Educational Innovation,” *Romania Education Forum*, Bucharest
- “Open Education: Past, Present, and Future,” *UNESCO Brazil OER Workshop*, Brasilia
- 2009 “The Open Education Revolution,” *De Onderwijsdagen 2009 (Education Days)*, Utrecht, Netherlands
- “The Open Education Revolution,” *Brazilian Workshop on Challenges and Perspectives of Open Educational Resources*, Sao Paulo
- “From Open Education to Textbooks of the Future,” *International Society for the Scholarship of Teaching and Learning*, Bloomington.
- “Connexions: Building Communities and Sharing Knowledge,” *Maryland Association of Boards of Education Annual Conference*, Ocean City.
- “Open Education in the Western World,” *The Guardian Activate Summit*, London, UK.

- “Randomized Dimensionality Reduction: A New Framework for Signal Processing and Communications,” *IEEE International Symposium on Information Theory (ISIT)*, Seoul, Korea.
- “Open Education Unleashed,” *Canadian eLearning Conference*, Vancouver.
- “Open Access Learning,” *Canadian Learning Commons Conference*, Saskatoon, Saskatchewan.
- “The Open Education Revolution,” *Making Opportunity Affordable Opportunity Grant Program Academy*, Denver.
- “Open Educational Resources: A Modern Approach to Teaching and Learning,” *Republic of Poland Parliament Special Conference on Open Education*, Warsaw.
- “The Emerging Economics of Open Access Education,” *eTech Ohio*, Columbus
- 2008 “Compressive Sensing Theory and Applications,” *IMA (UK) Conference on Mathematics of Signal Processing VIII*, Cirencester, UK.
- “Exploiting Sparsity through Compressive Sampling,” *Workshop on Sparsity and its Application to Large Inverse Problems*, Robinson College, Cambridge University.
- “Open Access Textbooks,” *Online Educa Berlin 2008*, Berlin
- “Open Access Education — Building Communities and Sharing Knowledge,” *AACE E-Learn Conference*, Las Vegas
- “Open Access Education — Building Communities and Sharing Knowledge,” *National School Boards Association Annual Meeting*, Seattle.
- “The Open Education Movement: Transforming the Economics and Ecology of Education,” *Distinguished Lecture Series of the Texas Language Technology Center (TLTC)*, University of Texas, Austin
- “Open Access Education: Building Communities and Sharing Knowledge,” *National Education Computing Conference*, San Antonio, TX
- “Distributed Compressive Sensing,” *Sensor, Signal, and Information Processing Workshop*, Sedona, AZ.
- “Open Access Education: Building Communities and Sharing Knowledge,” *Innovations in Online Learning Conference*, Austin.
- “An Introduction to Compressive Sensing,” *DARPA IPTO Retreat*, Annapolis, MD.
- “Compressive Sensing, Wavelets, and Sparsity,” *SPIE Defense + Security* (acceptance speech for SPIE Wavelet Pioneer Award), Orlando.
- “Connexions and Open Access Textbooks,” *Teaching and Learning with Technology Conference*, University of North Carolina, Raleigh.
- “Compressive Signal Processing,” *42nd Conference on Information Sciences and Systems (CISS)*, Princeton.
- “The Open Access Textbook Revolution,” *Independent College Bookstore Association Annual Meeting*, Destin, FL.
- “A Single-Pixel Camera based on TI DLP Technology,” *Keynote Demo at the Texas Instruments Developers Conference*, Dallas (with Kevin Kelly).
- “Connexions — Education for a Networked World,” *The UP Experience*, Houston.
- “Compressive Signal Processing,” *IAM-PIMS-MITACS Distinguished Colloquium Series*, UBC, Vancouver.

- 2007 “Compressive Sensing: A New Framework for Computational Data Acquisition,” *CAMSAP (Computational Advances in Multi-Sensor Adaptive Processing)*, St. Thomas, Virgin Islands.  
 “Connexions and the Open Access Educational Publishing Revolution,” *EdNET Conference*, Chicago.  
 “Compressive Imaging for Vision Applications,” *National Instruments Vision Summit*, Austin.  
 “Compressive Detection and Estimation via Smashed Filtering,” *AMS 2007 von Neumann Symposium on Sparse Representation and High-Dimensional Geometry*, Snowbird.  
 “Compressive Imaging,” *International Imaging Industry Association (I3A) 61st Annual Conference*, Denver.  
 “Connexions – Building Sustainable, Global Educational Communities,” *Innovations in Education for India, China, and America*, Emory University, Atlanta.  
 “Connexions: An Open-Access Education Case Study,” *Educause Annual Meeting*, Atlanta.
- 2006 “Connexions: Open Access Engineering Curricula,” *ASEE Global Colloquium on Engineering Education*, Rio de Janeiro, Brazil  
 “Collaborative and Distributed Signal Processing in Sensor Networks,” *IEEE Digital Signal Processing Workshop*, Jackson Lake Lodge Grand Teton National Park.  
 “Multiscale Compressive Sensing of Image Ensembles,” *EPFL Bernoulli Center Workshop on Wavelets and Applications*, Lausanne, Switzerland.  
 “Connexions and the Open-Access Education Revolution,” *TED – Technology, Entertainment, and Design*, Monterey.
- 2005 “Connexions – Building Communities and Sharing Knowledge in Educational Leadership,” *National Council of Professors of Educational Administration 59th Annual Conference*, Washington, DC.  
 “Open-Access Publishing in Education — Building Communities and Sharing Knowledge,” *Maricopa Community Colleges Ocotillo Retreat*, Phoenix.  
 “COMPASS: A Multiscale Sensor Network Architecture for Distributed Data Processing,” *IEEE Sensor, Signal and Information Processing Workshop*, Tempe.
- 2002 “Connexions – Education for a Networked World,” *IEEE Digital Signal Processing Workshop*, Callaway Gardens.
- 2001 “Traitement des Images Multiechelle,” *Symposium GRETSI '01 sur le Traitement du Signal et des Images*, Toulouse, France.  
 “Connexions and Educational Leadership,” *National Council of Professors of Educational Administration 55th Annual Conference*, Houston.  
 “Besov, Bayes, and Plato,” *Nonlinear Estimation and Classification Workshop*, Mathematical Sciences Research Institute (MSRI), University of California-Berkeley
- 1996 “Modern Time-Frequency Analysis,” *Dynamics Days*, Lyon, France.  
 “Linear and Quadratic Time-Frequency Representations,” *IEEE-SP International Symposium on Time-Frequency and Time-Scale Analysis*, Paris, France.

### **Invited Lectures**

- 2017 ML@RICE  
 University of Manitoba



- 2016 Learning Summit, Stanford University  
Stanford Center for Image Systems Engineering
- 2015 Caltech, UC-Berkeley  
IPAM Workshop on Computational Photography and Intelligent Cameras (UCLA)  
ICDM Workshop on Data Mining for Educational Assessment and Feedback (ASSESS 2015)  
NIPS Workshop on Multiresolution Methods for Large Scale Learning  
NIPS Workshop on BigNeuro 2015: Making Sense of Big Neural Data
- 2014 SPARC Open Access Meeting  
University of Houston Image Analysis Seminar,  
Educause, special session on Adaptive Learning
- 2013 Rice CEVE Seminar Series
- 2012 “Personalized Learning and Connexions,” Consortium for School Networking (CoSN) Annual Conference, Washington, DC  
Shell Research
- 2011 Workshop on Sparse Statistics, Optimization and Machine Learning, Banff International Research Station, Canada  
Workshop on Sparse and Low Rank Approximation, Banff International Research Station, Canada  
Learning Workshop (aka “Snowbird Workshop”), Fort Lauderdale  
Panelist on “Innovative Content: The Future is Here Today,” at Council of Chief State School Officers *National Conference on Student Assessment*, Orlando  
Rice Education Entrepreneurship Program (REEP) Summer Institute  
Panelist at Academy of Management “Exploratory Caucus Session on Open Education,” San Diego  
SEG Workshop on Compressive Sensing, San Antonio  
*Open Language Summit: Promoting a Culture of Sharing*, COERLL, UT-Austin  
UCLA
- 2010 ExxonMobil Upstream Research, NASA JSC, University of Houston, Lawrence Livermore National Laboratory, M. D. Anderson Cancer Center  
Invited panelist at the Computing Research Association annual meeting on “Peer Review and the Computing Sciences”  
Park City Mathematics Institute (Institute for Advanced Study, Princeton University)  
Rice Alliance – Austin Chapter Distinguished Professor Lecture  
Association of American Publishers Annual Conference Oxford Debate on Intellectual Property (teamed with Lawrence Lessig against William Strong and Allan Adler)
- 2009 Invited panelist at SPARC-ACRL Forum on the transformative potential of Open Educational Resources
- 2008 U. British Columbia, Microsoft Research, IMA (U. Minnesota)  
Invited tutorial on “Compressive Sensing” at *EUSIPCO*, Lausanne

- Invited talk on “Exploiting Sparsity in Compressive Sensing and Learning” at *Joint ICML, UAI and COLT workshops*, Helsinki
- Azriel Rosenfeld Distinguished Lecture Series in Vision and Graphics*, University of Maryland
- Tutorial on “Compressive Sensing Theory and Applications” at *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Las Vegas
- Short course on “Compressive Sampling: Theory and Applications” at *SPIE Defense+Security*, Orlando
- Invited panelist on “Textbooks of the Future: Free and Collaborative!” at *South-by-Southwest*, Austin
- Short course on “Compressive Sampling” at UCSD Workshop on *Information Theory and its Applications (ITA)*, San Diego
- 2007 UCSD Workshop on Information Theory and its Applications, International Congress on Industrial and Applied Mathematics (Zurich), Southern Regional Education Board Educational Technology Cooperative, UIUC, Wolfram Research, National Science Teachers Association, Ukrainian Library Conference
- IMA short course on “Compressive Sampling and Frontiers in Signal Processing” with E. Candes and R. DeVore,
- 2006 IMA (U. Minnesota), TI Developers Conference, Google, Michigan State, Boston U., Toledo, LANL, AMD Global Vision Conference
- Tutorial on “Compressed Sensing: A New Framework for Sparse DSP” at *IEEE International Conference on Image Processing (ICIP)*, Atlanta
- Connexions workshops in Hanoi and Ho Chi Minh City, Vietnam
- 2005 IMA (U. Minnesota), FIT, CMU, UC-Berkeley, UCB MSRI, TI Developers Conference, ExxonMobil, NLII Conference, USC Annenberg Center, ConocoPhillips, Texas Instruments
- 2004 MIT, UCLA IPAM, UC-Berkeley, UBC, BCcampus, U. Wisconsin, UNC SAMSI, TI Developers Conference
- Open Knowledge and Social Research Networks Workshop*, Stanford Humanities Center
- IHP Summer School on Multiscale Geometric Data Representation – Complexity, Analysis and Applications*, ETH-Zurich
- Wavelet and Multiscale Methods Workshop*, Oberwolfach, Germany
- Second International Conference on Computational Harmonic Analysis*, Vanderbilt University
- Multiscale Geometric Analysis Workshop*, University of Arkansas
- 2003 Princeton, U. Minnesota, U. Washington, Botanical Research Institute of Texas, Texas Instruments, National Instruments, IBM Watson, Microsoft Research
- NAS/Carnegie Workshop on *Transforming the Humanities*
- Applied Inverse Problems: Theoretical and Computational Aspects Workshop*, UCLA IPAM, Lake Arrowhead
- FNRS Wavelets and Applications Workshop*, Esneux, Belgium
- Wavelets and Statistics Workshop*, Grenoble, France
- Applicable Harmonic Analysis Workshop*, Banff International Research Station, Canada

- 2002 MIT, Caltech, INRIA Sophia-Antipolis (France), U. Cambridge, ETH Zurich, UC-Louvain-la-Neuve (Belgium), UNESCO  
*Semester in Harmonic Analysis*, CEMRACS, Marseille, France
- 2001 Polytechnic, U. Manitoba, Dalhousie, ENST (Paris), U. Pierre et Marie Curie (Paris VI), Stavanger College (Norway), INRIA-Rennes (France)  
*Department of Communications Summer Research Institute*, EPFL, Switzerland  
*Ideal Data Representation Workshop*, Institute for Mathematics and Applications (IMA), University of Minnesota  
*Workshop on Analysis with Wavelets, Signals, and Geometry*, Center for Discrete Mathematics and Computer Science (DIMACS), Rutgers University
- 2000 U. Illinois, Princeton, Microsoft Research, Lucent Bell Labs, Houston Area Chapter of the American Statistical Association, Society of Rice University Women, Rice Graduate Student Association Teaching Workshop  
*Wavelet Applications in Signal Processing Mini-Symposium, Third European Congress of Mathematics*, Barcelona
- 1999 Hong Kong U. Science and Technology, Beijing U., Tsinghua, Stanford, U. South Carolina, Ricoh Silicon Valley Research Center, Houston Area Chapter of the American Statistical Association  
*Wavelets and Multiresolution Workshop*, Foundations of Computational Mathematics, City University of Hong Kong
- 1998 U. Edinburgh, Imperial College, U. Bristol, Cambridge, Nortel Networks (Harlow, UK), Schlumberger (Cambridge, UK), Picometrix, Nortel Networks (Ottawa), SBC Communications, Western Geophysical, Rice School of Continuing Studies  
*Data Analysis Workshop*, Isaac Newton Institute, Cambridge University  
*Swiss Science Foundation Wavelets and Applications Workshop*, Centro Stefano Franscini, Monte Verità, Ticino, Switzerland,  
*EC Summer School on Bayesian Signal Processing*, Isaac Newton Institute, Cambridge University  
*International Conference on Wavelets and Multiscale Methods*, Tangers, Morocco
- 1997 INRIA Rocquencourt (France), Shell Research
- 1996 Michigan State, U. Houston, Technical University of Delft (Netherlands), U. Colorado, Halliburton Geophysics, Rockwell Euclid Laboratories, Texas Instruments, Mobil, Exxon  
*NSF/ONR Workshop on Signal Processing for Manufacturing and Machine Monitoring*
- 1995 Schlumberger, Exxon, Western Geophysical, SRI International, Lawrence Livermore National Laboratory
- 1994 U. Michigan  
*Thematic Days on Time-Frequency, Multiresolution, and Wavelets*, INSA Lyon, France, March 10, 1994.
- 1993 U. Manitoba, U. Texas at Arlington, Telecom Paris, Technical University of Vienna, Western Atlas
- 1992 U. Wisconsin, Johns Hopkins, Utah, Ohio State

## PATENTS

28 US and 6 foreign patents in signal processing and acquisition. Rice University has licensed 12 of these patents to the startup, InView, and 6 to a large multinational corporation to support their integration of compressive sensing into their products. (A confidentiality agreement precludes Rice from disclosing either the company or its products.)

“Methods and Systems for Video Compressive Sensing for Dynamic Imaging,” US patent 9,552,658, issued 24 January 2017.

“Apparatus and Method for Compressive Imaging and Sensing Through Multiplexed Modulation,” US patent 9,124,755, issued 1 September 2015.

“Hot Spot Correction in a Compressive Imaging System,” US Patent 8,922,688, issued 30 December 2014.

“Method and Apparatus for Compressive Domain Filtering and Interference Cancellation,” US Patent 8,725,784, issued 13 May 2014.

“Adaptive Search for Atypical Regions in Incident Light Field and Spectral Classification of Light in the Atypical Regions,” US Patent 8,717,551, issued 6 May 2014.

“Dual-Port Measurements of Light Reflected from Micromirror Array,” US Patent 8,717,466, issued 6 May 2014.

“Method and Apparatus for On-Line Compressed Sensing,” US Patent 8,687,689, issued 1 April 2014.

“Low-Pass Filtering of Compressive Imaging Measurements to Infer Light Level Variation,” US Patent 8,570,406, issued 29 October 2013.

“Determining Light Level Variation in Compressive Imaging by Injecting Calibration Patterns into Pattern Sequence,” US Patent 8,570,405, issued 29 October 2013.

“Method And Apparatus For Signal Detection, Classification And Estimation From Compressive Measurements,” US Patent 8,483,492, issued 9 July 2013.

“Method and Apparatus for Signal Reconstruction from Saturated Measurements,” US Patent 8,456,345, issued 4 June 2013.

“Method and Apparatus for Compressive Imaging Device,” US Patent 8,199,244, issued 12 June 2012; US Patent 8,848,091, issued 30 September 2014; European Patent 1,880,524 issued 30 October 2013.

“Apparatus and Method for Compressive Sensing Radar Imaging,” US Patent 7,928,893, issued 19 April 2011.

“Method And Apparatus For Automatic Gain Control For Nonzero Saturation Rates,” US Patent 8,487,796, issued 23 February 2011.

“Method And Apparatus For Compressive Parameter Estimation And Tracking,” US Patent 8,566,053, issued 22 October 2010.

“Analog System for Computing Sparse Codes,” US Patent 7,783,459, issued 24 August 2010.

“Throughput Maximization in Wireless Communication Systems,” US Patent 7,522,657, issued 21 April 2009.

“Method and Apparatus for Distributed Compressed Sensing,” US Patent 7,271,747, issued 18 September 2007. US Patent 7,511,643, issued 31 March 2009.

“Signaling Techniques in Channels With Asymmetric Powers and Capacities,” US Patent 7,035,400, issued 25 April 2006.

“Spectral Optimization for Communication under a Peak Frequency-Domain Power Constraint,” US Patent 6,839,429 issued 4 January 2005.

“Spectral Optimization and Joint Signaling Techniques with Multi-line Separation in the Presence of Crosstalk,” US Patent 6,317,495 issued 13 November 2001.

“Spectral Optimization and Joint Signaling Techniques with Upstream / Downstream Separation for Communication in the Presence of Crosstalk,” US Patent 6,292,559 issued 18 September 2001.

## JOURNAL PUBLICATIONS

Google Scholar citation statistics: <http://scholar.google.com/citations?user=N-BBA20AAAAJ>  
(H-index = 92; 42,000 citations as of January 2017)

Ranking of US/World Computer Scientists by H-index: <http://www.guide2research.com/scientists/US>  
(#72 in US and #94 in World as of January 2017)

- A. Aghazadeh, M. Golbabaee, A. S. Lan, and R. G. Baraniuk, “Insense: Incoherent Sensor Selection for Sparse Signals,” submitted to *IEEE Transactions on Signal Processing*, 2017.
- R. G. Baraniuk, S. Foucart, D. Needell, Y. Plan, M. Wootters, “One-Bit Compressive Sensing of Dictionary-Sparse Signals,” submitted to *Information and Inference*, 2016.
- A. E. Waters, A. S. Lan, R. Ning, C. Studer, and R. G. Baraniuk, “SPRITE: A Data-Driven Response Model For Multiple Choice Questions,” submitted to *IEEE Transactions on Learning Technologies* (special issue on Learning Analytics), 2016.
- E. L. Dyer, T. Goldstein, R. J. Patel, K. Kording, and R. G. Baraniuk, “Self-Expressive Decompositions for Matrix Approximation and Clustering,” submitted to *IEEE Transactions on Signal Processing*, 2015.
- C. Studer, T. Goldstein, W. Yin, and R. G. Baraniuk, “Democratic Representations,” submitted to *Applied and Computational Harmonic Analysis (ACHA)*, 2015.
- A. B. Patel, T. Nguyen, and R. G. Baraniuk, “A Probabilistic Theory of Deep Learning,” <http://arxiv.org/abs/1504.00641>, 2015.
- T. Goldstein, C. Studer, R. G. Baraniuk, “A Field Guide to Forward-Backward Splitting with a FASTA implementation,” <http://arxiv.org/abs/1411.3406>, 2015.
- R. G. Baraniuk, S. Foucart, D. Needell, Y. Plan, M. Wootters, “Exponential Decay of Reconstruction Error from Binary Measurements of Sparse Signals,” to appear in *IEEE Transactions on Information Theory*, 2017
- A. Mousavi, A. Maleki and R.G. Baraniuk, “Consistent Parameter Estimation for LASSO and Approximate Message Passing,” to appear in *Annals of Statistics*, 2017
- A. Mirhoseini, E. Dyer, E. Songhori, R. G. Baraniuk, and F. Koushanfar, “RankMap: A Framework for Distributed Learning from Dense Datasets,” to appear in *IEEE Transactions on Neural Networks and Learning Systems*, 2017.
- S. Asif, A. Ayremlou, A. Sankaranarayanan, A. Veeraraghavan, and R. G. Baraniuk, “FlatCam: Thin, Bare-Sensor Cameras using Coded Aperture and Computation,” to appear in *IEEE Transactions on Computational Imaging* (special issue on Extreme Imaging), 2017.
- E. C. Chi, G. Allen, and R. G. Baraniuk, “Convex Biclustering,” *Biometric Methodology*, March 2017.
- R. G. Baraniuk, T. Goldstein, A. Sankaranarayanan, C. Studer, A. Veeraraghavan, and M. B. Wakin, “CS-Video: Algorithms, Architectures, and Applications for Compressive Video Sensing,” *IEEE Signal Processing Magazine*, Vol. 34, No. 1, pp. 52–66, January 2017.

- A. Aghazadeh, A. Y. Lin, M. A. Sheikh, A. L. Chen, L. M. Atkins, C. L. Johnson, J. F. Petrosino, R. A. Drezek, and R. G. Baraniuk, "Universal Microbial Diagnostics using Random DNA Probes," *Science Advances*, vol. 2, 28 September 2016.
- V. Boominathan, J. K. Adams, S. Asif, B. Avants, J. T. Robinson, R. G. Baraniuk, A. C. Sankaranarayanan, A. Veeraraghavan, "Lensless Imaging: A Computational Renaissance," *IEEE Signal Processing Magazine* (special issue on Computational Photography and Displays), Vol. 33, No. 5, pp. 23–35, September 2016.
- C. Metzler, A. Maleki, and R. G. Baraniuk, "From Denoising to Compressed Sensing," *IEEE Transactions on Information Theory*, Vol. 62, No. 9, pp. 5117–5144, September 2016.
- T. Baran, R. G. Baraniuk, A. V. Oppenheim, P. Prandoni, M. Vetterli, "MOOC Adventures in Signal Processing: Bringing DSP to the Era of Massive Open Online Courses," *IEEE Signal Processing Magazine*, Vol. 33, Issue 4, pp. 62–83, July 2016.
- J. P. Long, E. C. Chi, and R. G. Baraniuk "Estimating a Common Period for a Set of Irregularly Sampled Functions with Applications to Periodic Variable Star Data," *The Annals of Applied Statistics*, Vol. 10, No. 1, pp. 165–197, January 2016.
- J. Chi, E. C. Chi, and R. G. Baraniuk, " $k$ -POD: A Method for Clustering Partially Observed Data," *The American Statistician*, 2015.
- C. Hegde, A. Sankaranarayanan, W. Yin, and R. G. Baraniuk, "NuMax: A Convex Approach for Learning Near-Isometric Linear Embeddings," *IEEE Transactions on Signal Processing*, Vol. 63, No. 22, pp. 6109–6121, November, 2015.
- T. Goldstein, L. Xu, Y. Li, K. F. Kelly, and R. G. Baraniuk, "The STOne Transform: Multiresolution Image Enhancement and Real-Time Compressive Video," *IEEE Transactions on Image Processing*, Vol. 24, No. 12, pp. 5581–5593, December 2015.
- A. Sankaranarayanan, L. Xu, C. Studer, Y. Li, K. F. Kelly, and R. G. Baraniuk, "Video Compressive Sensing for Spatial Multiplexing Cameras using Motion-Flow Models," *SIAM Journal on Imaging Sciences*, Vol. 8, No. 3, pp. 1489–1518, 2015.
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- E. L. Dyer, T. A. Goldstein, R. Patel, K. P. Kording, and R. G. Baraniuk, "Sparse Self-Expressive Decompositions for Dimensionality Reduction and Clustering," *Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Cambridge, UK, July 2015.
- S. Asif and R. G. Baraniuk, "Calibration-Free Accelerated Dynamic MRI based on Low-Rank Matrix Recovery," *Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Cambridge, UK, July 2015.

- T. Goldstein, C. Studer, and R. G. Baraniuk, “Forward-Backward Splitting Made FASTA,” *Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Cambridge, UK, July 2015.
- T. Goldstein, C. Studer, and R. G. Baraniuk, “Efficient Algorithms for  $\ell_\infty$ -Norm Minimization,” *Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Cambridge, UK, July 2015.
- C. Metzler, A. Maleki, and R. G. Baraniuk, “Optimal Recovery from Compressive Measurements via Denoising-based Approximate Message Passing,” *Sampling Theory and Applications (SampTA)*, Washington, D.C., May 2015.
- A. Waters, D. Tinapple, and R. G. Baraniuk, “A Bayesian Approach to Ranked Peer Grading,” *ACM Conference on Learning at Scale*, Vancouver, March 2015.
- A. Lan, D. Vats, A. Waters, and R. G. Baraniuk, “Mathematical Language Processing: Automatic Grading and Feedback for Open Response Mathematical Questions,” *ACM Conference on Learning at Scale*, Vancouver, March 2015.
- A. Mousavi, A. Maleki, and R. G. Baraniuk, “Optimal Tuning of Approximate Message Passing,” *Allerton Conference on Communication, Control, and Computing*, Allerton, IL, September 2014.
- A. Lan, C. Studer, and R. G. Baraniuk, “Time-Varying Learning and Content Analytics via Sparse Factor Analysis,” *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, New York, August 2014.
- A. Lan, C. Studer, and R. G. Baraniuk, “Quantized Matrix Completion for Personalized Learning,” *International Conference on Educational Data Mining (EDM)*, London, July 2014.
- D. Vats, C. Studer, and R. G. Baraniuk “Item Selection in Massive Open Online Courses,” *International Meeting of the Psychometric Society (IMPS)*, July 2014.
- A. Lan, C. Studer, and R. G. Baraniuk, “Matrix Recovery From Quantized and Corrupted Measurements,” *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP’14*, Florence, May 2014.
- C. Hegde, A. Sankaranarayanan, and R. G. Baraniuk, “Lie Operators for Compressive Sensing,” *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP’14*, Florence, May 2014.
- D. Vats and R. G. Baraniuk, “Path Thresholding: Asymptotically Tuning-Free High-Dimensional Sparse Regression,” *17th International Conference on Artificial Intelligence and Statistics (AISTATS)*, Reykjavik, Iceland, 2014.
- D. Vats, R. D. Nowak, and R. G. Baraniuk, “Active Learning for Undirected Graphical Model Selection,” *17th International Conference on Artificial Intelligence and Statistics (AISTATS)*, Reykjavik, Iceland, 2014.
- T. Goldstein, E. Esser, and R. G. Baraniuk, “Adaptive Primal Dual Optimization for Image Processing and Learning,” *Neural Information Processing Systems (NIPS)*, Optimization for Machine Learning Workshop, Lake Tahoe, December 2013.
- D. Vats and R. G. Baraniuk, “When in Doubt, SWAP: High-Dimensional Sparse Recovery from Correlated Measurements,” *Neural Information Processing Systems (NIPS)*, Lake Tahoe, December 2013.
- A. Waters, C. Studer, R. G. Baraniuk, “Bayesian Pairwise Collaboration Detection in Educational Datasets,” *IEEE GlobalSIP Symposium on New Sensing and Statistical Inference Methods*, Austin, December 2013.

- W. L. Chan, R. G. Baraniuk, D. Mittleman, H. T. Chen, A. Taylor, I. Brener, M. Cich, “Terahertz Imaging using Compressive Sensing,” *IEEE GlobalSIP Symposium on Millimeter Wave Imaging and Communications*, Austin, December 2013.
- E. Dyer, C. Studer, J. Robinson, and R. G. Baraniuk, “A Robust and Efficient Method to Recover Neural Events from Noisy and Corrupted Data,” *IEEE EMBS Conference on Neural Engineering*, San Diego, November 2013.
- L. Anitori, A. Maleki, M. Otten, R. G. Baraniuk, and P. Hoogetboom, “Compressive Sensing Radar: Simulation and Experiments for Target Detection,” *European Signal Processing Conference (EUSIPCO)*, Marrakech, Morocco, September 2013.
- C. Studer, G. Pope, P. Navarro, and R. G. Baraniuk, “Recovering Sparse Low-Rank Blocks in Tandem Mass Spectrometry,” *Allerton Conference on Communication, Control, and Computing*, Allerton, IL, September 2013.
- C. Hegde, A. C. Sankaranarayanan, and R. G. Baraniuk, “Learning Measurement Matrices for Redundant Dictionaries,” *Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Lausanne, Switzerland, July 2013.
- D. Vats, C. Studer, A. Lan, L. Carin, and R. G. Baraniuk, “Test-size Reduction for Concept Estimation,” *International Conference on Educational Data Mining (EDM)*, Memphis, July 2013.
- Y. Li, C. Hedge, R. G. Baraniuk, and K. F. Kelly, “Compressive Classification via Secant Projections,” *Imaging and Applied Optics Congress*, Arlington, VA, June 2013.
- A. Aghazadeh, A. Ayremlou, D. Calderon, T. Goldstein, R. Patel, D. Vats, and R. G. Baraniuk, “Adaptive Step Size Selection for Optimization via the Ski Rental Problem,” *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP’13*, Vancouver, May 2013.
- E. Dyer, C. Studer, and R. G. Baraniuk, “Subspace Clustering with Dense Representations,” *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP’13*, Vancouver, May 2013.
- J. P. Slavinsky, K. J. Davenport, A. C. Butler, E. J. Marsh, and R. G. Baraniuk, “Open Online Platforms Advancing DSP Education,” *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP’13*, Vancouver, May 2013.
- A. E. Waters, A. S. Lan, C. Studer, and R. G. Baraniuk “Learning Analytics Via Sparse Factor Analysis,” *Neural Information Processing Systems Workshop on Personalizing Education With Machine Learning*, Lake Tahoe, NV, December 2012.
- A. S. Lan, A. E. Waters, C. Studer, and R. G. Baraniuk, “Joint Sparse Factor Analysis and Topic Modeling for Learning Analytics,” *Neural Information Processing Systems Workshop on Personalizing Education With Machine Learning*, Lake Tahoe, NV, December 2012.
- D. K. Grady, M. Moll, C. Hegde, A. C. Sankaranarayanan, and R. G. Baraniuk, and L. E. Kavraki, “Multi-Objective Sensor-Based Replanning for a Car-Like Robot,” *IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR 2012)*, College Station, TX, November 2012.
- D. K. Grady, M. Moll, C. Hegde, A. C. Sankaranarayanan, R. G. Baraniuk, and L. E. Kavraki, “Multi-Robot Target Verification With Reachability Constraints,” *IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR 2012)*, College Station, TX, November 2012.
- C. Studer, W. Yin, and R. G. Baraniuk, “Signal Representations with Minimum  $\ell_\infty$  Norm,” *Allerton Conference on Communication, Control, and Computing*, Allerton, IL, September 2012.
- C. Hegde, A. Sankaranarayanan, and R. G. Baraniuk, “Near Isometric Linear Embeddings of Manifolds” *IEEE Statistical Signal Processing Workshop*, Ann Arbor, August 2012.

- J. Haupt, R. Castro, R. D. Nowak, and R. G. Baraniuk, “Sequentially Designed Compressed Sensing” *IEEE Statistical Signal Processing Workshop*, Ann Arbor, August 2012.
- E. Dyer, R. G. Baraniuk, and U. Rutishauer, “Group Sparse Coding with a Collection of Winner-Take-All Networks,” *Computational Neuroscience Symposium – CNS*, Atlanta, July 2012.
- J. Shi, A. Sankaranarayanan, C. Studer, R. G. Baraniuk, “Video Compressive Sensing for Dynamic MRI,” *Computational Neuroscience Symposium – CNS*, Atlanta, July 2012.
- C. Hegde and R. G. Baraniuk, “SPIN: Iterative Signal Recovery on Incoherent Manifolds,” *IEEE International Symposium on Information Theory – ISIT*, Boston, July 2012.
- S. Jalali, A. Maleki, and R. G. Baraniuk. “Minimum Complexity Pursuit: Stability Analysis,” *IEEE International Symposium on Information Theory – ISIT*, Boston, July 2012.
- L. Anitori, A. Maleki, M. Otten, P. Hoogeboom, and R. G. Baraniuk, “Compressive CFAR Radar Detection,” *IEEE Radar Conference*, Atlanta, May 2012 (Runner Up, Best Student Paper Prize).
- L. Anitori, A. Maleki, M. Otten, R. G. Baraniuk, and P. Hoogeboom, “Compressive CFAR Radar Detectors,” *International Workshop on Compressed Sensing applied to Radar*, Bonn, Germany, May 2012.
- T. A. Russell, L. McMackin, R. Bridge, R. G. Baraniuk, “Compressive Hyperspectral Sensor for LWIR Gas Detection,” *SPIE Conference on Defense, Security, and Sensing*, Baltimore, April 2012.
- A. E. Waters, A. Lan, C. Studer, and R. G. Baraniuk, “Sparse Factor Analysis for Cognitive Tutoring,” *Learning Workshop*, Snowbird, UT, April 2012.
- L. Anitori, A. Maleki, M. Otten, P. Hoogeboom, and R. G. Baraniuk, “CS Radar Imaging via Adaptive CAMP,” *9th European Conference on Synthetic Aperture Radar*, Nuremberg, Germany, April 2012.
- A. Sankaranarayanan, C. Studer, and R. G. Baraniuk, “CS-MUVI: Video Compressive Sensing for Spatial-Multiplexing Cameras,” *IEEE International Conference on Computational Photography (ICCP)*, Seattle, April 2012.
- S. R. Schnelle, J. P. Slavinsky, P. Boufounos, M. A. Davenport, and R. G. Baraniuk, “A Compressive Phase Locked Loop,” *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP’12*, Kyoto, Japan, March 2012.
- A. Waters, C. Sestok, and R. G. Baraniuk, “A Bit-Constrained SAR ADC for Compressive Acquisition of Frequency Sparse Signals,” *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP’12*, special session on Analog Signal Processing, Kyoto, Japan, March 2012.
- C. Studer and R. G. Baraniuk, “Dictionary Learning from Sparsely Corrupted of Compressed Signals” *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP’12*, Kyoto, Japan, March 2012.
- A. Waters, and R. G. Baraniuk, “SpaRCS: Recovering Low-Rank and Sparse Matrices from Compressive Measurements,” *Neural Information Processing Systems (NIPS)*, Granada, Spain, December 2011.
- J. N. Laska, J. P. Slavinsky, and R. G. Baraniuk, “The Polyphase Random Demodulator for Wideband Compressive Sensing,” *45rd Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2011.
- A. Maleki, M. Narayan, and R. G. Baraniuk, “Suboptimality of Nonlocal Means on Images with Sharp Edges,” *Allerton Conference on Communication, Control, and Computing*, Allerton, IL, September 2011.
- A. C. Sankaranarayanan, C. Hegde, S. Narayan, and R. G. Baraniuk, “Go with the Flow: Optical Flow-based Transport Operators for Image Manifolds,” *Allerton Conference on Communication, Control, and Computing*, Allerton, IL, September 2011.



- C. Studer and R. G. Baraniuk, "Recovery Guarantees for Restoration and Separation of Approximately Sparse Signals," *Allerton Conference on Communication, Control, and Computing*, Allerton, IL, September 2011.
- A. Maleki and R. G. Baraniuk, "Least Favorable Compressed Sensing Problems for First Order Methods," *IEEE International Symposium on Information Theory (ISIT)*, St. Petersburg, Russia, August, 2011.
- M. F. Duarte and R. G. Baraniuk, "Compressive Sensing with Biorthogonal Wavelets via Structured Sparsity," *SPARS*, Edinburgh, July 2011.
- E. Dyer, A. Sankaranarayanan, and R. G. Baraniuk, "Learning hybrid linear models via sparse recovery," *SPARS*, Edinburgh, July 2011.
- J. R. Treichler, M. F. Davenport, J. N. Laska, and R. G. Baraniuk, "Dynamic Range and Compressive Sensing Signal Acquisition Receivers," *Defense Applications of Signal Processing (DASP)*, Coolum, Australia, July 2011.
- J. P. Slavinsky, J. Laska, and R. G. Baraniuk, "The Compressive Multiplexer for Multi-Channel Compressive Sensing," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'11*, Prague, May 2011.
- J. Haupt and R. G. Baraniuk, "Robust Support Recovery Using Sparse Compressive Sensing Matrices," *Conference on Information Sciences and Systems (CISS)*, Johns Hopkins University, March 2011.
- M. A. Davenport, C. Hegde, M. A. Duarte, and R. G. Baraniuk, "High-Dimensional Data Fusion via Joint Manifold Learning," *AAAI Symposium on Manifold Learning*, Arlington, VA, November 2010.
- M. A. Davenport, S. R. Schnelle, J. P. Slavinsky, R. G. Baraniuk, M. B. Wakin, and P. T. Boufounos, "A Wideband Compressive Radio Receiver," *Military Communications Conference (MILCOM)*, November 2010.
- M. F. Duarte and R. G. Baraniuk, "Recovery of Frequency-Sparse Signals from Compressive Measurements," *Allerton Conference on Communication, Control, and Computing*, Allerton, IL, September 2010.
- A. C. Sankaranarayanan, P. K. Turaga, R. G. Baraniuk, and R. Chellappa, "Compressive Acquisition of Dynamic Scenes," *European Conference on Computer Vision (ECCV)*, Crete, Greece, September 2010.
- E. Dyer, M. F. Duarte, D. H. Johnson, and R. G. Baraniuk, "Recovering Spikes from Noisy Neuronal Calcium Signals via Structured Sparse Approximation," *9th International Conference on Latent Variable Analysis and Signal Separation (LVA/ICA)*, St. Malo, France, September 2010.
- M. F. Duarte and R. G. Baraniuk, "Kronecker Product Matrices for Compressive Sensing," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'10*, Dallas, March 2010.
- C. Hedge and R. G. Baraniuk, "Compressive Sensing of a Superposition of Pulses," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'10*, Dallas, March 2010.
- S. Schnelle, J. Laska, C. Hegde, M. F. Duarte, M. Davenport, and R. G. Baraniuk, "Texas Hold 'Em Algorithms for Distributed Compressive Sensing," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'10*, Dallas, March 2010.
- E. Dyer, D. H. Johnson, and R. G. Baraniuk, "Sparse Coding in Modular Networks," *Computational and Systems Neuroscience (COSYNE)*, Salt Lake City, February 2010.
- J. D. Haupt, R. G. Baraniuk, R. M. Castro, and R. D. Nowak, "Compressive Distilled Sensing: Sparse Recovery Using Adaptivity in Compressive Measurements," *43rd Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, October 2009.

- J. Laska, M. Davenport, and R. G. Baraniuk, "Exact Signal Recovery from Sparsely Corrupted Measurements through the Pursuit of Justice," *43rd Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, October 2009.
- J. R. Treichler, M. A. Davenport, and R. G. Baraniuk, "Application of Compressive Sensing to the Design of Wideband Signal Acquisition Receivers," *Defense Applications of Signal Processing (DASP)*, Lihue, Hawaii, September 2009.
- M. Davenport and R. G. Baraniuk, "Sparse Geodesic Paths," *AAAI Symposium on Manifold Learning*, Arlington, VA, November 2009.
- E. Dyer, D. H. Johnson, and R. G. Baraniuk, "Sparse Coding with Population Sketches," *Computational Neuroscience (CNS)*, Berlin, July 2009.
- V. Cevher, P. Indyk, C. Hegde, and R. G. Baraniuk, "Compressive Sensing Recovery of Signals with Clustered Sparsity," *Conference on Sampling Theory and Applications (SAMPTA)*, Marseille, May 2009.
- J. Laska, P. Boufounos, and R. G. Baraniuk, "Finite Range Scalar Quantization for Compressive Sensing," *Conference on Sampling Theory and Applications (SAMPTA)*, Marseille, May 2009.
- M. F. Duarte, C. Hegde, V. Cevher, and R. G. Baraniuk, "Recovery of Compressible Signals in Unions of Subspaces," *Conference on Information Sciences and Systems (CISS)*, Johns Hopkins University, March 2009.
- M. Davenport, P. Boufounos, and R. G. Baraniuk, "Compressive Domain Interference Cancellation," *SPARS Workshop*, Saint-Malo, France, April 2009.
- V. Cevher, P. Boufounos, R. G. Baraniuk, A. Gilbert, and M. Strauss, "Near-Optimal Bayesian Localization via Incoherence and Sparsity," *International Symposium on Integrated Processing in Sensor Networks (IPSN)*, San Francisco, April 2009.
- V. Cevher, C. Hegde, M. F. Duarte, and R. G. Baraniuk, "Sparse Signal Recovery Using Markov Random Fields," *Neural Information Processing Systems (NIPS)*, Vancouver, December 2008.
- V. Cevher, P. Boufounos, M. F. Duarte, and R. G. Baraniuk, "Space Cutting for Distributed Localization," *42nd Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, October, 2008.
- T. Ragheb, J. N. Laska, R. G. Baraniuk, and Y. Massoud, "Implementation of a Random Demodulation Based Compressive Analog-to-Digital Converter," *IEEE Midwest Symposium on Circuits and Systems*, Knoxville, August 2008.
- V. Cevher and R. G. Baraniuk, "Compressive Sensing for Sensor Calibration," *Fifth IEEE Workshop on Sensor Array and Multi-Channel Signal Processing (SAM)*, Darmstadt, Germany, July 2008.
- V. Cevher, M. F. Duarte, and R. G. Baraniuk, "Distributed Target Localization via Spatial Sparsity," *16th European Signal Processing Conference — EUSIPCO*, Lausanne, August 2008.
- P. Boufounos and R. G. Baraniuk, "Reconstructing Sparse Signals from their Zero Crossings," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'08*, Las Vegas, May 2008.
- M. F. Duarte, M. B. Wakin, and R. G. Baraniuk, "Wavelet-domain Compressive Signal Reconstruction using a Hidden Markov Tree Model," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'08*, Las Vegas, May 2008.
- S. Pfetsch, T. Ragheb, J. N. Laska, H. Nejati, A. Gilbert, M. Strauss, R. G. Baraniuk, and Y. Massoud, "A Hardware Prototype for Random-Sampling Based Sub-Nyquist Analog-to-Information Conversion," *IEEE International Symposium on Circuits and Systems (ISCAS)*, Seattle, May 2008.

- W. L. Chan, K. Charan, D. Takhar, K. F. Kelly, R. G. Baraniuk, and D. M. Mittleman, "A Single-Pixel Terahertz Camera," *Conference on Lasers and Electro-Optics (CLEO)*, San Jose, May 2008.
- P. Boufounos and R. G. Baraniuk, "One-Bit Compressive Sensing," *Conference on Information Sciences and Systems (CISS)*, Princeton, March 2008.
- M. A. Sheikh, O. Milenkovic, and R. G. Baraniuk, "Designing Compressive Sensing DNA Microarrays," *Second International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, St. Thomas, Virgin Islands, December 2007.
- C. Hegde, M. Davenport, M. Wakin, and R. G. Baraniuk, "Efficient Machine Learning using Random Projections," *Neural Information Processing Systems (NIPS) Workshop on Efficient Machine Learning*, Whistler, December 2007.
- M. Davenport, C. Hegde, M. Wakin, and R. G. Baraniuk, "Manifold-based Approaches for Improved Classification," *Neural Information Processing Systems (NIPS) Workshop on Topology Learning*, Whistler, December 2007.
- C. Hegde, M. Wakin, and R. G. Baraniuk, "Random Projections for Manifold Learning," *Neural Information Processing Systems (NIPS)*, Vancouver, December 2007.
- C. J. Rozell, D. H. Johnson, R. G. Baraniuk, B. A. Olshausen, "Locally Competitive Algorithms for Sparse Approximation," *IEEE International Conference on Image Processing (ICIP)*, San Antonio, TX, September 2007.
- M. F. Duarte, M. Davenport, M. Wakin, J. Laska, D. Takhar, K. F. Kelly, R. G. Baraniuk, "Multiscale Random Projections for Compressive Classification," *IEEE International Conference on Image Processing (ICIP)*, San Antonio, TX, September 2007.
- M. Sheikh, R. G. Baraniuk, "Blind Error-free Detection of Transform-Domain Watermarks," *IEEE International Conference on Image Processing (ICIP)*, San Antonio, TX, September 2007.
- P. T. Boufounos, M. F. Duarte, and R. G. Baraniuk, "Sparse Signal Reconstruction from Noisy Compressive Measurements Using Cross Validation," *IEEE Statistical Signal Processing Workshop*, Madison, WI, August, 2007.
- M. Davenport, R. G. Baraniuk, and C. Scott, "Minimax support vector machines," *IEEE Statistical Signal Processing Workshop*, Madison, WI, August, 2007.
- M. A. Sheikh, S. Sarvotham, O. Milenkovic, and R. G. Baraniuk, "DNA Array Decoding From Nonlinear Measurements By Belief Propagation," *IEEE Statistical Signal Processing Workshop*, Madison, WI, August, 2007.
- M. Moravec, J. K. Romberg, R. G. Baraniuk, "Compressive Phase Retrieval," *Wavelets XII in SPIE International Symposium on Optical Science and Technology*, San Diego, August 2007.
- P. Boufounos, R. G. Baraniuk, "Sigma Delta Quantization for Compressive Sensing," *Wavelets XII in SPIE International Symposium on Optical Science and Technology*, San Diego, August 2007.
- T. Ragheb, S. Kirolos, J. Laska, A. Gilbert, M. Strauss, R. G. Baraniuk, Y. Massoud, "Implementation Models for Analog-to-Information Conversion via Random Sampling," *IEEE International Midwest Symposium on Circuits and Systems*, Montreal, August 2007.
- J. N. Laska, S. Kirolos, M. F. Duarte, T. Ragheb, R. G. Baraniuk, Y. Massoud, "Theory and Implementation of an Analog-to-Information Converter using Random Demodulation," *IEEE International Symposium on Circuits and Systems (ISCAS)*, New Orleans, May 2007.
- W. L. Chan, M. L. Moravec, R. G. Baraniuk, and D. M. Mittleman, "Terahertz Imaging with Compressed Sensing and Phase Retrieval," *Conference on Lasers and Electro-Optics (CLEO)*, San Jose, May 2007.

- R. G. Baraniuk and T. P. H. Steeghs, "Compressive Radar Imaging," *IEEE Radar Conference*, Waltham, MA, April 2007.
- C. J. Rozell, D. H. Johnson, R. G. Baraniuk, B. A. Olshausen, "Neurally Plausible Sparse Coding via Competitive Algorithms," *Computational and Systems Neuroscience (COSYNE)*, Salt Lake City, February 2007.
- M. A. Davenport, M. F. Duarte, M. B. Wakin, J. A. Laska, D. Takhar, K. F. Kelly, R. G. Baraniuk, "The Smashed Filter for Compressive Classification and Target Recognition," *IS&T/SPIE Computational Imaging IV*, San Jose, January 2007.
- M. Davenport, R. G. Baraniuk, and M. B. Wakin, "Scalable Inference and Recovery from Compressive Measurements," *Neural Information Processing Systems (NIPS) Workshop on Novel Applications of Dimensionality Reduction*, Whistler, December 2006.
- S. Kirolos, T. Ragheb, J. Laska, M. F. Duarte, Y. Massoud, R. G. Baraniuk, "Practical Issues in Implementing Analog-to-Information Converters," *IEEE International Workshop on System-on-Chip for Real-Time Applications (IWSOC)*, December 2006.
- J. Laska, S. Kirolos, Y. Massoud, R. G. Baraniuk, A. Gilbert, M. Iwen, M. Strauss, "Random Sampling for Analog-to-Information Conversion of Wideband Signals," *IEEE Dallas Circuits and Systems Workshop*, October 2006.
- S. Kirolos, J. Laska, M. Wakin, M. F. Duarte, D. Baron, T. Ragheb, Y. Massoud, R. G. Baraniuk, "Analog-to-Information Conversion via Random Demodulation," *IEEE Dallas Circuits and Systems Workshop*, October 2006.
- W. Chan, H. Choi, R. G. Baraniuk, "Multiscale Disparity Estimation using the Quaternion Wavelet Transform," *IEEE International Conference on Image Processing (ICIP)*, Atlanta, October 2006.
- M. B. Wakin, J. Laska, M. F. Duarte, D. Baron, S. Sarvotham, D. Takhar, K. Kelly, R. G. Baraniuk, "A New Camera Architecture for Compressive Imaging," *IEEE International Conference on Image Processing (ICIP)*, Atlanta, October 2006.
- S. Sarvotham, D. Baron, R. G. Baraniuk, "Measurements and Bits: Compressed Sensing Meets Information Theory," *Allerton Conference on Communication, Control, and Computing*, Allerton, IL, September 2006.
- R. Von Borries, C. S. Burrus, R. G. Baraniuk, "DSpanish: Open Educational Resources for Engineering in Spanish," *IEEE Digital Signal Processing Workshop*, Jackson Lake Lodge, September 2006.
- M. A. Davenport, R. G. Baraniuk, C. Scott, "Learning Minimum Volume Sets with Support Vector Machines," *IEEE International Workshop on Machine Learning for Signal Processing*, Maynooth, Ireland, September 2006.
- S. Sarvotham, D. Baron, R. G. Baraniuk, "Sudocodes – Fast Measurement and Reconstruction of Sparse Signals," *IEEE International Symposium on Information Theory – ISIT*, Seattle, July 2006.
- M. Wakin and R. G. Baraniuk, "Random Projections of Signal Manifolds," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'06*, Special session on Statistical Inference on Nonlinear Manifolds, Toulouse, France, May 2006.
- M. F. Duarte, M. Davenport, M. B. Wakin, and R. G. Baraniuk, "Sparse Signal Detection from Incoherent Projections," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'06*, Toulouse, France, May 2006.
- J. Tropp, M. B. Wakin, M. F. Duarte, D. Baron, and R. G. Baraniuk, "Random Filters for Compressive Sampling and Reconstruction," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'06*, Toulouse, France, May 2006.

- M. Davenport, C. Scott, and R. G. Baraniuk, "Controlling False Alarms with Support Vector Machines," *IEEE International Conference on Acoustics, Speech and Signal Processing – ICASSP'06*, Toulouse, France, May 2006.
- M. Wakin, J. N. Laska, M. F. Duarte, D. Baron, S. Sarvotham, D. Takhar, K. F. Kelly, R. G. Baraniuk, "Compressive Imaging for Video Representation and Coding," *Picture Coding Symposium*, special session on Next Generation Video Representation, Beijing, April 2006.
- M. F. Duarte, M. Wakin, D. Baron, and R. G. Baraniuk, "Universal Distributed Sensing via Random Projections," *International Symposium on Integrated Processing in Sensor Networks (IPSN)*, Nashville, April 2006.
- R. Wagner, R. G. Baraniuk, Shu Du, D. B. Johnson, A. Cohen, "An Architecture for Wavelet Analysis and Processing in Sensor Networks," *International Symposium on Integrated Processing in Sensor Networks (IPSN)*, Nashville, April 2006.
- D. Baron, S. Sarvotham, R. G. Baraniuk, "Coding vs. Packet Retransmission in Lossy Communication Systems," *Conference on Information Sciences and Systems (CISS)*, Baltimore, March 2006.
- D. Takhar, J. N. Laska, M. B. Wakin, M. F. Duarte, D. Baron, S. Sarvotham, K. F. Kelly, R. G. Baraniuk, "A New Compressive Imaging Camera Architecture using Optical-Domain Compression," *IS&T/SPIE Computational Imaging IV*, San Jose, January 2006.
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