Christopher J. Rozell

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RESEARCH INTERESTS

Computational neuroscience and neuroengineering; neuromorphic computing; interactive machine learning and artificial intelligence; signal processing; dynamical systems; statistics; optimization; biotechnology.

EDUCATION

Ph.D.,	Electrical and Computer Engineering	Rice University	May 2007
M.S.,	Electrical Engineering	Rice University	May 2002
B.S.E.,	Computer Engineering (magna cum laude)	University of Michigan — Ann Arbor	April 2000
B.F.A.,	Performing Arts Technology — Music	University of Michigan — Ann Arbor	April 2000

POSITIONS

Professor	Georgia Institute of Technology, School of ECE	2018–present
Adjunct Faculty	Georgia Institute of Technology, Interactive Computing	2015–present
Graduate Program Faculty	Georgia Institute of Technology, BME	2009–present
Associate Professor	Georgia Institute of Technology, School of ECE	2014–2018
Demetrius T. Paris Jr. Professor	Georgia Institute of Technology, School of ECE	2013–2014
Assistant Professor	Georgia Institute of Technology, School of ECE	2008–2014
Postdoctoral Scholar	University of California, Berkeley, School of Optometry	2007–2008
Postdoctoral Scholar	Rice University, ECE Department	2007
Research Assistant	Rice University, ECE Department	2001–2007
Research Assistant	MIT Lincoln Laboratory	2002
Research Assistant	University of Michigan, School of Music & EECS Dept.	1997–1999

HONORS AND AWARDS

Student Recognition of Excellence in Teaching: Class of 1934 Award	2020
ECE Outreach Award	2020
Class of 1940 W. Howard Ector Outstanding Teacher Award (Georgia Tech highest teaching award)	2019
Outstanding Junior Faculty Member Award (School of ECE, Georgia Tech)	2017
James S. McDonnell Foundation 21st Century Science Initiative Award (6 international recipients)	2014
Sigma Xi Young Faculty Research Award (Georgia Tech)	2014
NSF CAREER Award	2014
Demetrius T. Paris Junior Professorship	2013

CETL Class of 1940 Course Survey Teaching Effectiveness Award	2013
CETL/BP Junior Faculty Teaching Excellence Award	2013
Faculty of 1000 Biology (now F1000Prime) recognition for article (Rozell et al. 2008)	2010
CETL "Thank a Teacher" certificate (8 semesters)	2008–2020
Texas Instruments Distinguished Graduate Fellowship (Rice University)	2000–2007
Nettie S. Autrey Memorial Fellowship (Rice University)	2004
Llangollen Award for leadership and dedication (U. of Michigan, Men's Glee Club)	2000
EECS Department Outstanding Student Instructor Award (U. of Michigan)	1998
Tau Beta Pi	1998
Eta Kappa Nu	1996
Jackson Foundation Scholarship Award (top graduating scholar, Mason County, MI)	1994

RESEARCH SUPPORT

NSF	Learning, refining, and understanding models through relational feedback (co-PI)	2021–2025
NINDS (R01)	CRCNS: Closed-loop computational neuroscience for causally dissecting circuits (PI)	2019–2024
NIBIB (T32)	Training in Computational Neural Engineering (co-I)	2019–2024
DARPA	Active Similarity Learning and Manifold Graphs for Learning with Few Labels (co-PI)	2019–2022
NINDS (UH3)	Electrophysiological Biomarkers to Optimize DBS for Depression (co-PI)	2018–2023
JSMF	Scholar Award in Studying Complex Systems: Tracking time-varying low-dimensional structure to uncover the building blocks of complex dynamics (PI)	2015–2021
ONR	Moving Towards Zero-Shot Learning via Analogy and Imagination (PI)	2015–2020
NSF	CAREER: Exploiting Low-Dimensional Structure in Data for More Effective, Efficient and Interactive Machine Intelligence (PI)	2014–2020
NSF	BD Spokes: SPOKE: SOUTH: Large-scale Medical Informatics for Patient Care Coordination and Engagement (co-PI)	2016–2019
GT/NEC	Closed-Loop Optogenetic Control of Single Neurons In Vivo (PI)	2016-2017
ONR	Perpetual Systems Based on Cortical Computation (co-PI)	2015–2016
TI	Sparse Sampling of Multi-Modal Physiological Data (PI)	2015–2016
NSF	CIF:Medium:Collaborative Research: Tracking Low-Dimensional Information in Data Streams and Dynamical Systems (PI)	2014–2019
NEI (R01)	Neural Population Coding of Dynamic Natural Scenes (co-PI)	2009–2015
NSF	CIF:Medium: Analog Architectures for Optimization in Signal Processing (PI)	2009–2014
NGA	Compressive Sensing Design of LIDAR sensors (PI)	2009–2013
NGA	Unsupervised Learning of Hierarchical Structure in Multi-Band Imagery (co-PI)	2008–2015
NSF	Collaborative Research: Leveraging Low-Dimensional Structure for Time Series	2008–2013

Analysis and Prediction (PI)

PROFESSIONAL ACTIVITIES

Board of Directors:	Neuromatch, Inc.	2021–present
	Neuromatch Conference, LLC	2021–present
Associate Editor:	*IEEE Open Journal of Signal Processing* (inaugural ed. board)	2019–present
	Neurons, Behavior, Data analysis, and Theory (inaugural ed. board)	2018–present
	IEEE Transactions on Molecular, Biological and Multi-scale Communications (inaugural ed. board)	2015–2018
Program Committee:	*Neural Information Processing Systems (NeurIPS)*	2020
	Signal Processing with Adaptive Sparse Structured Representations (SPARS)	2019
	International Conference on Machine Learning (ICML)	2016
	IEEE Global Conference on Signal and Information Processing (GlobalSIP) symposium on *Information Processing for Big Data*	2014
	IEEE Global Conference on Signal and Information Processing (GlobalSIP) symposium on *New Sensing and Statistical Inference Methods*	2013
	IEEE Statistical Signal Processing Workshop	2012
Organizer:	*Neuromatch 3.0: An Unconference in Neuroscience* Co-organized with D. Goodman, K. Kording, B. Wyble, T. Achakulvisut, T. Vogels, Y. Poirazi and M. Peters	2020
	Neuromatch 2.0: An Unconference in Computational Neuroscience Co-organized with D. Goodman, K. Kording, B. Wyble, T. Achakulvisut, T. Vogels, Y. Poirazi and G. Lindsay; Sponsorship from IEEE Brain	2020
	Intelligent Interactions with the Brain (I^2B) *Workshop, Neural Engineering Center, Georgia Institute of Technology* Co-organized with G. Stanley and L. Ting	2019
	IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) special session on *Principles of Dynamics and Control in Machine Learning* Co-organized with M. Davenport, J. Haupt and M. Wakin	2019
	Computational and Systems Neuroscience (Cosyne) workshop on *Closed-loop control of neural systems and circuits for scientific discovery* Sponsorship from NIH BRAIN Initiative and IEEE Brain Co-organized with G. Stanley	2018
	IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) special session on *Low-dimensional Dynamical Systems in Signal Processing and Data Analysis* Co-organized with A. Charles, M. Davenport, J. Romberg and M. Wakin	2017

	Asilomar Conference on Signals, Systems & Computers invited session on *Extracting information from electrophysiology data*	2013
	IEEE Conference on Decision and Control invited session on *Exploiting Sparsity and Compressive Sensing in System Identification* Co-organized with M. Wakin and T. Vincent	2010
Core Creative Team:	GTArts dance commission inspired by neuroscience (premier in 2022)	2020–present
Member:	IEEE Brain Core Team	2017–present
	Institute of Electrical and Electronics Engineers (S'00-M'09-SM'12)	
	American Association for the Advancement of Science	
	Society for Neuroscience	
	International Neuroethics Society	
Manuscript Review:	*Biological Cybernetics*, *eLife Hippocampus*, IEEE Transactions (*Automatic Control, Biomedical Circuits and Systems, Geoscience and Remote Sensing, Image Processing, Information Theory, Instrumentation & Measurement, Neural Networks, Signal and Information Processing over Networks, Signal Processing*), IEEE Letters (*Geoscience and Remote Sensing, Signal Processing*), *Information & Inference*, *International Conference on Learning Representations (ICLR)*, *Journal of Computational Neuroscience*, *Journal of Neurophysiology*, *Neural Computation*, *Neural Information Processing Systems (NeurIPS)*, *PLoS Computational Biology*, *Proceedings of the National Academy of Sciences*, *Statistica Sinica*	
Funding Review:	NSF Science and Technology Center Program (Site Visit Team), German Federal Ministry of Education and Research (Bernstein Awards), US National Science Foundation, Collaborative Research in Computational Neuroscience Program (joint NSF/NIH), US Air Force Office of Scientific Research, US Army Research Office, Swiss National Science Foundation	

TEACHING EXPERIENCE AND OTHER ACTIVITIES

Instructor:	Introduction to Signal Processing – recitations (ECE 2025)	
	Introduction to Signal Processing – lecture (ECE 2025)	
	Introduction to Digital Signal Processing – recitations (ECE 2026)	
	Introduction to Probability and Statistics for ECE (ECE 3077)	
	Signals and Systems (ECE 3084)	
	Information Processing Models of Neural Systems (ECE/BME 6790)	
	Signal Detection and Estimation (ECE 7251)	
	Are You Thinking of Becoming an Academic? (ECE8801/ME8801/ISYE8811/ChBE8801)	
	Future Faculty Practicum (ECE8801)	
Activities:	Co-developed new course "Future Faculty Practicum"	2020
	Co-developed new course "Are You Thinking of Becoming an Academic?"	2018
	Team Mentor, CREATE-X Idea To Prototype team	2017
	CETL Class of 1969 Teaching Fellows program	2011–2012
	Developed new course "Information Processing Models of Neural Systems"	2009
	ECE Effective Teaching Workshop series	2008
	PAESMEM/Stanford Workshop on Mentoring in Engineering	2004

TRAINEE SUPERVISION

Postdoctoral Scholars

Sankar Alagapan	Topic: *Electrophysiological Biomarkers to Optimize Deep Brain Stimulation for Treatment Resistent Depression* Co-supervised with Robert Butera	2018–present

PhD students

Asim Gazi	Thesis: *Wearable Physiology Monitoring* Co-advised with Omer Inan NSF Graduate Fellowship	2021–present
Belén Martín Urcelay	Thesis: *Information Theory Approaches to Human-in-the-loop Machine Learning* Co-advised with Matthieu Bloch Fulbright Fellow	2021–present
Kion Fallah	Thesis: *Active learning and importance sampling for training generative models*	2019–present
Kyle Johnsen	Thesis: *Building, exploiting and distributing tools for closed-loop optogenetic stimulation* Computational Neuroengineering Training Program Graduate Scholar	2019–present
Matt O'Shaughnessy	Thesis: *Causal Methods for Understanding Complex Systems* Co-advised with Mark Davenport NDSEG graduate fellowship; International Affairs Paper Competition Award (GT); Science ATL Communication Fellowship	2016–present
Stefano Fenu	Thesis: *Leveraging Low Dimensional Structure for Search and Ranking* Co-advised with Thad Starner	2016–present
Adam Willats	Thesis: *Leveraging closed-loop control to understand neural circuits* Computational Neuroscience Training Program Graduate Fellow	2016–present
Greg Canal	Thesis: *Feedback Coding for Efficient Interactive Machine Learning* Selected participant in TRIPODS Summer School, Institute for Foundations of Data Science, UW-Madison Now Postdoctoral Scholar at University of Wisconsin, Madison	2016–2021
Marissa Connor	Thesis: *Structured Learning With Manifold Representations of Natural Data Variations* NSF graduate fellowship; Herbert P. Haley Fellowship	2014–2021
Ayse Cakmak	Thesis: *Disease State Prediction Using Multiscale Dynamics*	2019–2021

	Co-advised with Gari Clifford	
Nicholas Bertrand	Thesis: *Exploiting Structure in Dynamical Systems for Tracking and Dimensionality Reduction*	2013–2019
	Now Principal Systems Engineer, Future Technical Leaders Program at Northrop Grumman	
John Lee	Thesis: *Exploiting Low-dimensional Structure and Optimal Transport for Tracking and Alignment*	2015–2019
	DSO Postgraduate Scholar; CSIP Outstanding Research Award	
	Now Principal Member of Technical Staff at DSO National Laboratories of Singapore	
Abigail Kressner	Thesis: *Structure in Time-frequency Binary Masking*	2011–2015
	NSF and NDSEG graduate fellowships; Chih Foundation Research Award	
	Now Assistant Professor, Technical University of Denmark (DTU) and Copenhagen University Hospital	
Adam Charles	Thesis: *Dynamics and Correlations in Sparse Signal Acquisition*	2010–2015
	ECE Outstanding GRA Award; CSIP Outstanding Research Award	
	Sigma Xi Best Dissertation Award	
	Postdoctoral Scholar at Princeton University	
	Now Assistant Professor of Biomedical Engineering at Johns Hopkins University	
Mengchen Zhu	Thesis: *Sparse Coding Models of Neural Response in the Primary Visual Cortex*	2009–2015
	Fellow in the Insight Data Science Fellows Program	
	Now Associate at BlackRock, Inc.,	
Aurèle Balavoine	Thesis: *Mathematical Analysis of a Dynamical System for Sparse Recovery*	2011–2014
	Co-advised with Justin Romberg	
	Now Software Engineer at The MathWorks, Inc.	
Han Lun Yap	Thesis: *Constrained Measurement Systems of Low-dimensional Signals*	2009–2013
	DSO Postgraduate Scholar	
	ECE Outstanding GRA Award; CSIP Outstanding Research Award	
	Now Principal Member of Technical Staff and Lab Director (Radar Lab) at DSO National Laboratories of Singapore	

MS students

Arish Alreja	Project: *Volume constraints in sparse coding models*	2015–2016
	Now Ph.D. student in Neural Computation at Carnegie Mellon University	
Alex Moreno	Thesis: *Restricting Vocabulary Size in Pediatric Augmentative and Alternative Communication*	2014–2015

	Co-advised with Ayanna Howard	
	Now Ph.D. student in Computer Science at Georgia Tech	
Abigail Kressner	Thesis: *Auditory Models for Evaluating Algorithms*	2010–2011
Robert Ortman	Thesis: *Sensory Input Encoding and Readout Methods for in Vitro Living Neuronal Networks*	2009–2012
	Co-advised with Steve Potter	
	Now researcher at Georgia Tech Research Institute	

Selected undergraduate students

Allison Del Giorno	Thesis: *A Sparse Coding Model of V1 Produces Surround Suppression Effects in Response to Natural Scenes*	2012–2013
	Barry M. Goldwater Scholar; NSF and NDSEG graduate fellow	
	Now Ph.D. student in Robotics at Carnegie Mellon University	
Saurabh Kumar	Project: *Manifold learning as a visual model*	2015
	Knight-Hennessy Scholar (Stanford University)	
	Barry M. Goldwater Scholar; AI Resident at Google Brain Montreal	
	Now Ph.D. student in Computer Science at Stanford University	
Alex Ritchie	Project: *Learning manifold transport operators on dynamic data*	2015–2016
	Now Ph.D. student in Electrical & Computer Engineering at the University of Michigan	
Sivabalan Manivasagam	Project: *Interactive Object Segmentation using Binary Inputs*	2016–2018
	Barry M. Goldwater Scholar; NSF graduate fellow	
	Georgia Tech University Interdisciplinary Research Award	
	Now at Uber Advanced Technologies Group and Ph.D. student at the University of Toronto	
Alec Helbling	Project: *Navigating the Latent Space of Deep Generative Models*	2020–present

UNIVERSITY SERVICE

Elected Representative, ECE Statutory Advisory Committee	2020–present
Member, ECE Faculty Recruitment Committee	2013–2018, 2020–present
Selected Fellow, Diversity and Inclusion Fellows Program	2020–2021
Leadership team, Development of Georgia Tech seed grant program	2019–2020
Mentor, School of ECE Junior Faculty Mentoring Program	2019–2020
Member, College of Engineering committee on Reappointment, Promotion and Tenure	2018–2020
Selected Participant, Provost's Emerging Leaders Program	2018–2019
Co-Director, Georgia Tech Neural Engineering Center	2018
Planning team, Development of Ph.D. program in neuroscience & neurotechnology	2018
Faculty Guide, Exploration of Social Justice in South Africa, Stamps President's Scholars	2017
Associate Director, Georgia Tech Neural Engineering Center	2016–2017

Member, Center for Machine Learning at Georgia Tech (ML@GT)	2016–present
Member, Institute for Robotics & Intelligent Machines (IRIM)	2016–present
Member, Institute for Data Engineering and Science (IDEaS)	2016–present
Member, Neuro@GT Steering Committee	2016–present
Steering Committee, Emory/GT Kavli Brain Forum	2016–2019
Co-Chair, ECE Strategic Planning & Strategic Doing Committee	2016–2017
Executive Council, Emory Neuromodulation and Innovation Center (ENTICe)	2014–2020
Faculty Guide, 2014 Class of Stamps President's Scholars	2014–2018
Executive Committee Member, Georgia Tech Neural Engineering Center	2014–2016
Member, Faculty Council on Data Science and Engineering	2014–2016
Member, BME Faculty Recruitment Committee (Neuroengineering)	2014–2015
Member, Neuro@GT Task Force	2014
Panelist, NSF CAREER Award Proposal Workshop (GT OSP)	2014
Member, Mark and Linda Smith Chair Search Committee (ECE)	2013–2015
Member, Parker H. Petit Institute for Bioengineering and Bioscience (IBB)	2013–present
Member, Center for Signal and Information Processing	2012–present
Faculty Associate, Grand Challenges Living Learning Community	2012–2015
Program Faculty, Interdisciplinary Bioengineering Graduate Program	2009–present
Member, ECE School Chair Search Committee	2011–2012
Admissions Panel, Georgia Tech President's Scholarship Program	2012–2013
Member, Task Force on Family Friendly Policies	2012
Member, ECE Graduate Student Recruitment Committee	2011–2012
Member, Laboratory for Neuroengineering	2008–2012
Member, ECE Student-Faculty Committee	2008–2011
Member, ECE Student Award Selection Committee	2009–2011
Panelist, ECE Academic Careers CV Workshop	2008, 2010
Member, ECE Research Promotion Committee	2009
Panelist, ECE Academic Careers Seminar Series	2008, 2009
University Associate, Martel College (Rice University)	2004–2007
Member, University Council (Presidential advisory committee, Rice University)	2004–2006
Panelist, workshop for new teaching assistants (Rice University, School of Engineering)	2003, 2004
Member, ECE Graduate Student Council (Rice University)	2002–2003
Member, ECE Graduate Committee (Rice University)	2002–2003

OUTSIDE SERVICE AND OTHER ACTIVITIES

Presenter, Gwinnett School of Mathematics, Science and Technology Speaker Series	2019
Organizer and Speaker, Atlanta Science Festival community outreach event on *Neuro-Engineering: Blurring the Lines Between Mind and Machine*	2019

Sponsorship from Georgia Tech (College of Engineering, Depts. of ECE/BME) and IEEE Brain

Selected participant, Science Communication Bootcamp, Alan Alda Center for Communicating Science, Stony Brook University 2018

Invited participant, The Brain and Computation research program, Simons Institute for the Theory of Computing, University of California, Berkeley 2018

Faculty host, Georgia Intern Fellowship for Teachers (GIFT) program, Center for Education Integrating Science, Mathematics, and Computing (CEISMC), Georgia Tech 2018

Mentor, CyberLaunch 2015–present

Selected Participant, Kauffman FastTrac TechVenture course, Emory University 2015

Mentor, NeuroLaunch 2014–present

Technical Consultant, Qualcomm, Inc. 2013

Presenter, K-12 outreach (science/engineering demonstrations and tutoring) 1996–2011

Panelist, BRAIN program panel on neuroscience careers (Center for Behavioral Neuroscience) 2009

Judge, Science and Engineering Fair of Houston 2004

Technical Consultant, AdaptedWave Technologies, Inc. 2000

Project Chair, Tau Beta Pi elementary science demonstrations, (University of Michigan) 1998

Tutor, Reach Out! (University of Michigan educational outreach center) 1996–1998

MEDIA COVERAGE

Research

"These sleep monitoring innovations could make smartwatches better at tracking our slumber", *The Academic Times* 2021

Article: `https://bit.ly/2QdgyIE`

"Neurocomputing explained by Chris Rozell", *Learning Machines, ML@GT*, 2020

Article: `https://bit.ly/3e7mxXu`

"Q&A with Dr. Christopher Rozell on AI and Neuroscience", *IEEE Brain Initiative Q&A, IEEE Future Directions podcast series* 2020

Podcast: `https://bit.ly/3kysLlb`

"NIH Award Supports Groundbreaking Brain Research at Tech", *College of Engineering News, School of ECE News, and Parker H. Petit Institute for Bioengineering & Bioscience News* 2019

Article: `https://b.gatech.edu/2lGfY6Q`

"The Brain, Cosmos in the Cranium", *Georgia Tech Research Horizons* (featured article) 2017

Article: `https://b.gatech.edu/2tUGOH3`

Podcast: `https://bit.ly/2ti7TFf`

"Unraveling the Secrets of the Brain", *Georgia Tech Research Horizons* (cover article) 2012

Article: `https://b.gatech.edu/2lugiFP`

Rejecta Mathematica 2009

Science, The Economist, Nature.com, USA Today, Chronicle of Higher Education,
AMS Math in the Media, Ars Technica, MathDL, Rice News, Seed Magazine, Slashdot

PATENTS

1. M. O'Shaughnessy, G. Canal, M. Connor, M. Davenport, and C.J. Rozell. Methods for generating and providing causal explanations of artificial intelligence models and devices thereof, filed June 24, 2021. Patent application number PCT/US2021/038884.

2. J. Zia, O. Inan, J. Kimball, and C.J. Rozell. Systems and methods for automated localization of wearable cardiac monitoring systems and sensor position-independent hemodynamic inference, filed February 26, 2021. Patent application number 17/187,585.

3. G. Clifford, A. Cakmak, C.J. Rozell, and A. Willats. Systems and methods for detecting sleep activity, filed September 4, 2020. Patent application number PCT/US2020/049392.

4. G. Canal, , C.J. Rozell, S. Fenu, M. Davenport, and A. Massimino. Systems and methods for preference and similarity learning, filed February 3, 2020. Patent application number PCT/US2020/016379.

5. J. Lee and C.J. Rozell. Systems and methods for cell membrane identification and tracking, and technique automation using the same, issued August 4, 2020. U.S. patent number 10,733,419.

6. N.J. Halas, D.H. Johnson, S.W. Bishnoi, C.S. Levin, C.J. Rozell, and B.R. Johnson. All-optical nanoscale sensor, issued October 25, 2011. U.S. patent number 8,045,152.

7. C.J. Rozell, D.H. Johnson, R.B. Baraniuk, B.A. Olshausen, and R.L. Ortman. Neural circuit for computing sparse codes, issued August 24, 2010. U.S. patent number 7,783,459.

BOOK CHAPTERS

1. D.H. Johnson, I.N. Goodman, and C.J. Rozell. Information theory and systems neuroscience. In S. Grün and S. Rotter, editors, *Analysis of parallel spike trains*. Springer-Verlag, 2010.

JOURNAL PUBLICATIONS

1. G. Canal, Y. Diaz-Mercado, M. Egerstedt, and C. Rozell. A low-complexity brain-computer interface for high-complexity robot swarm control. June 2021. Under review.

2. A. Alreja, I. Nemenman, and C. Rozell. Constrained brain volume in an efficient coding model explains the fraction of excitatory and inhibitory neurons in sensory cortices. September 2020. Under review.

3. J. Zia, J. Kimball, C.J. Rozell, and O.T. Inan. Harnessing the manifold structure of cardiomechanical signals for physiological monitoring during hemorrhage. *IEEE Transactions on Biomedical Engineering*, 68(6):1759–1767, June 2021.

4. T. Achakulvisut, T. Ruangrong, P. Mineault, T.P. Vogels, M. Peters, P. Poirazi, C. Rozell, B. Wyble, D. Goodman, and K.P. Kording. Towards democratizing and automating online conferences: Lessons from the Neuromatch Conferences. *Trends in Cognitive Sciences*, 25(4):265–268, April 2021.

5. M.F. Bolus, A.A. Willats, C.J. Rozell, and G.B. Stanley. State-space optimal feedback control of optogenetically driven neural activity. *Journal of Neural Engineering*, 18(3):036006, March 2021.

6. P. Brown, M. O'Shaughnessy, C.J. Rozell, J. Romberg, and M. Flynn. A 17.8 MS/s compressed sensing radar accelerator using a spiking neural network. *IEEE Journal of Solid State Circuits*, 56(3):834–843, March 2021.

7. N. Bertrand, J. Lee, K. Prussing, S. Shapero, and C.J. Rozell. Infrared search and track with unbalanced optimal transport dynamics regularization. *IEEE Geoscience and Remote Sensing Letters*, pages 1–5, July 2020.

8. J. Lee, N. Bertrand, and C.J. Rozell. Unbalanced optimal transport regularization for imaging problems. *IEEE Transactions on Computational Imaging*, 6:1219–1232, July 2020.

9. N. Bertrand, A. Charles, J. Lee, P. Dunn, and C.J. Rozell. Efficient tracking of sparse signals via an earth mover's distance dynamics regularizer. *IEEE Signal Processing Letters*, 27:1120–1124, June 2020.

10. A. Cakmak, G. Da Poian, A. Willats, A. Haffar, R. Abdulbaki, Y. Ko, A. Shah, V. Vaccarino, D. Bliwise, C.J. Rozell, and G. Clifford. An unbiased efficient sleep-wake detection algorithm for a population with sleep disorders: Change Point Decoder. *Sleep*, February 2020.

11. M. O'Shaughnessy, M. Davenport, and C. Rozell. Sparse Bayesian learning with dynamic filtering for inference of time-varying sparse signals. *IEEE Transactions on Signal Processing*, 68(1):388–403, December 2019.

12. L. Zhang, J. Lee, C.J. Rozell, and A.C. Singer. Sub-second dynamics of theta-gamma coupling in hippocampal CA1. *eLife*, 8:e44320, July 2019.

13. K.L. Fair, D.R. Mendat, A.G. Andreou, C.J. Rozell, J. Romberg, and D.V. Anderson. Sparse coding using the Locally Competitive Algorithm on the TrueNorth neurosynaptic system. *Frontiers in Neuroscience*, 13:754, July 2019.

14. I. Kolb, C. Landry, M. Yip, C. Lewallen, W. Stoy, J. Lee, A. Felouzis, B. Yang, E.S. Boyden, C.J. Rozell, and C.R. Forest. PatcherBot: a single-cell electrophysiology robot for adherent cells and brain slices. *Journal of Neural Engineering*, 16(4):046003, May 2019.

15. G. Da Poian, C.J. Rozell, R. Bernardini, R. Rinaldo, and G.D. Clifford. Matched filtering for heart rate estimation on compressive sensing ECG measurements. *IEEE Transactions on Biomedical Engineering*, 65(6):1349–1358, June 2018.

16. J. Lee, I. Kolb, C. Forest, and C.J. Rozell. Cell membrane tracking in living brain tissue using differential interference contrast microscopy. *IEEE Transactions on Image Processing*, (4):1847–1861, April 2018.

17. A. Eftekhari, H.L. Yap, M.B. Wakin, and C.J. Rozell. Stabilizing embedology: Geometry-preserving delay-coordinate maps. *Physical Review E*, 97(2):022222, February 2018.

18. M.F. Bolus, A.A. Willats, C.J. Whitmire, C.J. Rozell, and G.B. Stanley. Design strategies for dynamic closed-loop optogenetic neurocontrol in vivo. *Journal of Neural Engineering*, 15(2):026011, January 2018.

19. B.A. Olshausen and C.J. Rozell. Neuromorphic computation: Sparse codes from memristor grids. *Nature Nanotechnology*, 12(8):722–723, August 2017.

20. A.S. Charles, D. Yin, and C.J. Rozell. Distributed sequence memory of multidimensional inputs in recurrent networks. *Journal of Machine Learning Research*, 18(7):1–37, 2017.

21. A.S. Charles, A. Balavoine, and C.J. Rozell. Dynamic filtering of time-varying sparse signals via L1 minimization. *IEEE Transactions on Signal Processing*, 64(21):5644–5656, November 2016.

22. A.A. Kressner, T. May, and C.J. Rozell. Outcome measures based on classification performance fail to predict the intelligibility of binary-masked speech. *Journal of the Acoustical Society of America*, 139(6):3033–3036, June 2016.

23. A.A. Kressner, A. Westermann, J. Buchholz, and C.J. Rozell. Cochlear implant speech intelligibility outcomes with structured and unstructured binary mask errors. *Journal of the Acoustical Society of America*, 139(2):800–810, February 2016.

24. D. Millard, C. Whitmire, C.A. Gollnick, C.J. Rozell, and G.B Stanley. Electrical and optical activation of mesoscale neural circuits with implications for coding. *Journal of Neuroscience*, 35(47):15702–15715, November 2015.

25. M. Zhu and C.J. Rozell. Modeling inhibitory interneurons in efficient sensory coding models. *PLoS Computational Biology*, 11(7):e1004353, July 2015.

26. A. Balavoine, C.J. Rozell, and J. Romberg. Discrete and continuous-time soft-thresholding with dynamic inputs. *IEEE Transactions on Signal Processing*, 63(12):3165–3176, June 2015.

27. A.A. Kressner and C.J. Rozell. Structure in time-frequency binary masking errors and its impact on speech intelligibility. *Journal of the Acoustical Society of America*, 137(4):2025–2035, April 2015.

28. A. Eftekhari, H.L. Yap, C.J. Rozell, and M.B. Wakin. The restricted isometry property for random block diagonal matrices. *Applied and Computational Harmonic Analysis*, 38(1):1–31, January 2015.

29. A. Balavoine, J. Romberg, and C.J. Rozell. Correction to "Convergence and Rate Analysis of Neural Networks for Sparse Approximation". *IEEE Transactions on Neural Networks and Learning Systems*, 25(8):1595–1596, August 2014.

30. S. Shapero, M. Zhu, P. Hasler, and C.J. Rozell. Optimal sparse approximation with integrate and fire neurons. *International Journal of Neural Systems*, 24(05):1440001, August 2014.

31. A.S. Charles, H.L. Yap, and C.J. Rozell. Short term memory capacity in networks via the restricted isometry property. *Neural Computation*, 26(6):1198–1235, June 2014.

32. A.S. Charles and C.J. Rozell. Spectral super-resolution of hyperspectral imagery using re-weighted L1 spatial filtering. *IEEE Geoscience and Remote Sensing Letters*, 11(3):602–606, March 2014.

33. A. Balavoine, C.J. Rozell, and J. Romberg. Convergence speed of a dynamical system for sparse recovery. *IEEE Transactions on Signal Processing*, 61(17):4259–4269, September 2013.

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48. C.J. Rozell, D.H. Johnson, and R.M. Glantz. Measuring information transfer in crayfish sustaining fiber spike generators. *Biological Cybernetics*, 90(2):89–97, February 2004.

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CONFERENCE PUBLICATIONS

1. M. Connor, K. Fallah, and C. Rozell. Learning identity-preserving transformations on data manifolds. June 2021. Under review.

2. G. Canal, M. Bloch, and C. Rozell. Feedback coding for active learning. In *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Virtual meeting, April 2021. (Acceptance rate 30%).

3. M. Connor, G. Canal, and C. Rozell. Variational autoencoder with learned latent structure. In *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Virtual meeting, April 2021. (Acceptance rate 30%).

4. K. Fallah, A. Willats, N. Liu, and C. Rozell. Learning sparse codes from compressed representations with biologically plausible local wiring constraints. In *Neural Information Processing Systems (NeurIPS)*, Virtual meeting, December 2020. (Acceptance rate 20%).

5. M. O'Shaughnessy, G. Canal, M. Connor, M. Davenport, and C. Rozell. Generative causal explanations of black-box classifiers. In *Neural Information Processing Systems (NeurIPS)*, Virtual meeting, December 2020. (Acceptance rate 20%).

6. G. Canal, M. Connor, J. Jin, N. Nadagouda, M. O'Shaughnessy, C. Rozell, and M. Davenport. The PICASSO algorithm for Bayesian localization via paired comparisons in a union of subspaces model. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Barcelona, Spain, May 2020.

7. P. Brown, M. O'Shaughnessy, C. Rozell, J. Romberg, and M. Flynn. A 17.8 MS/s neural-network compressed sensing radar processor in 16nm FinFET CMOS. In *IEEE Custom Integrated Circuits Conference (CICC)*, Boston, MA, March 2020.

8. G. Canal, S. Fenu, and C. Rozell. Active ordinal tuplewise querying for similarity learning. In *AAAI Conference on Artificial Intelligence (AAAI)*, New York, NY, February 2020. **Selected for oral presentation.** (Acceptance rate 20%).

9. M. Connor and C. Rozell. Representing closed transformation paths in encoded network latent space. In *AAAI Conference on Artificial Intelligence (AAAI)*, New York, NY, February 2020. **Selected for spotlight presentation.** (Acceptance rate 20%).

10. G. Canal, M. O'Shaughnessy, C. Rozell, and M. Davenport. Joint estimation of trajectory and dynamics from paired comparisons. In *International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Guadeloupe, West Indies, December 2019.

11. J. Lee, M. Dabagia, E. Dyer, and C.J. Rozell. Hierarchical optimal transport for multimodal distribution alignment. In *Neural Information Processing Systems (NeurIPS)*, Vancover, Canada, December 2019. (Acceptance rate 21%).

12. M. O'Shaughnessy, M. Davenport, and C. Rozell. Dynamical system implementations of sparse bayesian learning. In *International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Guadeloupe, West Indies, December 2019.

13. G. Canal, A. Massimino, M. Davenport, and C. Rozell. Active embedding search via noisy paired comparisons. In *International Conference on Machine Learning (ICML)*, Long Beach, CA, June 2019. (Acceptance rate 23%).

14. G. Canal, S. Manivasagam, S. Liang, and C.J. Rozell. Interactive object segmentation with noisy binary inputs. In *Proceedings of the IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Anaheim, CA, November 2018.

15. N. Bertrand, J. Lee, A. Charles, P. Dunn, and C.J. Rozell. Sparse dynamic filtering via earth mover's distance regularization. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Calgary, Alberta, Canada, April 2018.

16. A. Charles, N. Bertrand, J. Lee, and C.J. Rozell. Earth-Mover's Distance as a tracking regularizer. In *IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Curaçao, Dutch Antilles, December 2017.

17. S. Fenu and C.J. Rozell. Rank learning by ordinal gerrymandering. In *Proceedings of the IEEE International Conference On Machine Learning And Applications (ICMLA)*, Cancun, Mexico, December 2017.

18. J. Lee and C.J. Rozell. Fast ADMM solver for reweighted total variation image deconvolution and inpainting. In *Proceedings of the IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Montreal, Canada, November 2017.

19. J. Lee and C.J. Rozell. Precision cell boundary tracking on DIC microscopy video for patch clamping. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, New Orleans, LA, March 2017.

20. A. Moreno, C.J. Rozell, and A. Howard. Restricting vocabulary size in pediatric augmentative and alternative communication. In *Rehabilitation Engineering and Assistive Technology Society of North America (RENSA) annual conference*, Denver, CO, June 2015.

21. A. Charles and C.J. Rozell. Convergence of basis pursuit de-noising with dynamic filtering. In *Proceedings of the IEEE Global Conference on Signal and Information Processing (GlobalSIP) symposium on Information Processing for Big Data*, Atlanta, GA, December 2014.

22. A. Charles, D. Yin, and C.J. Rozell. Can random linear networks store multiple long input streams? In *Proceedings of the IEEE Global Conference on Signal and Information Processing (GlobalSIP) symposium on Information Processing for Big Data*, Atlanta, GA, December 2014.

23. H.L. Yap, A. Eftekhari, M.B. Wakin, and C.J. Rozell. A first analysis of the stability of Takens' embedding. In *Proceedings of the IEEE Global Conference on Signal and Information Processing (GlobalSIP) symposium on Information Processing for Big Data*, Atlanta, GA, December 2014.

24. A. Balavoine, C.J. Rozell, and J.K. Romberg. Iterative soft-thresholding for time-varying signal recovery. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Florence, Italy, May 2014.

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28. A. Charles and C. Rozell. Dynamic filtering of sparse signals using reweighted l1. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.

29. A. Kressner, D.V. Anderson, and C. Rozell. A novel binary mask estimator based on sparse approximation. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.

30. D. Sale, C.J. Rozell, J.K. Romberg, and A.D. Lanterman. Compressive LADAR detector noise performance. In *Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2012.

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32. H.L. Yap, A. Charles, and C.J. Rozell. The restricted isometry property for echo state networks with applications to sequence memory capacity. In *IEEE Statistical Signal Processing Workshop*, Ann Arbor, MI, August 2012.

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34. A. Kressner, D. Anderson, and C. Rozell. Robustness of the hearing aid speech quality index (HASQI). In *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, New Paltz, NY, October 2011.

35. M.S. Asif, A. Charles, J. Romberg, and C. Rozell. Estimation and dynamic updating of time-varying signals with sparse variations. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Prague, Czech Republic, May 2011.

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39. A. Balavoine, C.J. Rozell, and J.K. Romberg. Global convergence of the Locally Competitive Algorithm. In *Proceedings of the IEEE Digital Signal Processing (DSP) Workshop*, Sedona, AZ, January 2011.

40. A. Charles, A.A. Kressner, and C.J. Rozell. Causal sparse decomposition of audio signals. In *Proceedings of the IEEE Digital Signal Processing (DSP) Workshop*, Sedona, AZ, January 2011.

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42. C.J. Rozell and P. Garrigues. Analog sparse approximation for compressed sensing recovery. In *Proceedings of the Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2010.

43. A. Charles and C.J. Rozell. Sparse coding for spectral signatures in hyperspectral images. In *Proceedings of the Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2010.

44. C.J. Rozell, H.L. Yap, J.Y. Park, and M.B. Wakin. Concentration of measure for block diagonal matrices with repeated blocks. In *Proceedings of the Conference on Information Sciences and Systems (CISS)*, Princeton, NJ, March 2010. Invited paper.

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50. C.J. Rozell and D.H. Johnson. Power scheduling for wireless sensor and actuator networks. In *Proceedings of the International Conference on Information Processing in Sensor Networks (IPSN)*, pages 470–478, Cambridge, MA, April 2007. (Acceptance rate 22%).

51. S.W. Bishnoi, C.S. Levin, C.J. Rozell, B.R. Johnson, D.H. Johnson, and N.J Halas. All-optical nanoscale pH meter: a plasmonic nanodevice with quantifiable output. In *Proceedings of the Annual Meeting of the IEEE Lasers and Electro-Optics Society (IEEE LEOS)*, Montreal, Canada, October 2006. Invited paper.

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54. C.J. Rozell and D.H. Johnson. Analysis of noise reduction in redundant expansions under distributed processing requirements. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pages 185–188, Philadelphia, PA, March 2005.

55. M.A. Lexa, C.J. Rozell, S. Sinanović, and D.H. Johnson. To cooperate or not to cooperate: Detection strategies in sensor networks. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pages 841–844, Montreal, Canada, May 2004.

56. C.J. Rozell and D. Manolakis. Matched filter performance for unequal target and background covariance matrices. In *Proceedings of the SPIE Defense and Security Symposium: Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery X*, pages 109–117, Orlando, FL, April 2004.

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CONFERENCE ABSTRACTS

1. H. Mayberg, P. Riva Posse, C. Rozell, R. Butera, K. Choi, A. Waters, M. Figee, S. Alagapan, A. Crowell, R. Gross, S. Heisig, M. Obatusin, A. Smith, T. Nauvel, and J. Cha. Electrophysiological biomarkers to optimize DBS for depression IV. In *The BRAIN Initiative Investigators Meeting*, June 2021.

2. T. Nauvel, S. Alagapan, S. Heisig, C. Rozell, H. Mayberg, and A. Waters. Electrophysiological biomarkers to optimize DBS for depression - supplement: Longitudinal study of the effects of subcallosal cingulate deep brain stimulation for treatment-resistant depression on the power spectrum of the resting electroencephalogram. In *The BRAIN Initiative Investigators Meeting*, June 2021.

3. C. Rozell, G. Stanley, M. Bolus, A. Willats, and K. Johnsen. Closed-loop computational neuroscience for causally dissecting circuits II. In *The BRAIN Initiative Investigators Meeting*, June 2021.

4. M. Bolus, A. Willats, C. Whitmire, C. Rozell, and G. Stanley. State-space optimal feedback control of neural circuits. In *International IEEE EMBS Conference on Neural Engineering (NER)*, May 2021.

5. A. Willats, M. O'Shaughnessy, K. Johnsen, and C.J. Rozell. When are open- and closed-loop control necessary for causal inference in neural circuits? In *Neuromatch 3.0*, October 2020.

6. H. Mayberg, P. Riva Posse, C. Rozell, S. Alagapan, R. Butera, K. Choi, A. Crowell, B. Howell, B. Mahmoudi, M. Obatusin, R. Gross, M. Sendi, V. Tiruvadi, A. Veerakumar, A. Waters, and P. Weiss. Electrophysiological biomarkers to optimize dbs for depression iii. In *The BRAIN Initiative Investigators Meeting*, June 2020.

7. C. Rozell, G. Stanley, M. Bolus, A. Willats, and K. Johnsen. Closed-loop computational neuroscience for causally dissecting circuits. In *The BRAIN Initiative Investigators Meeting*, June 2020.

8. M. Connor and C.J. Rozell. Unsupervised learning of manifold models for coding physical transformations. In *Neuromatch 2.0: An unconference in Computational Neuroscience*, March 2020.

9. A. Cakmak, G. Da Poian, A. Willats, A. Shah, V. Vaccarino, D. Bliwise, C.J. Rozell, and G. Clifford. A change point decoder for sleep/wake detection on memory constrained wearables. In *Neural Information Processing Systems (NeurIPS) Workshop, Learning with Temporal Point Processes*, Vancouver, Canada, December 2019.

10. J. Lee, M. Dabagia, E. Dyer, and C.J. Rozell. Hierarchical optimal transport for multimodal distribution alignment. In *Neural Information Processing Systems (NeurIPS) Workshop, Optimal Transport and Machine Learning*, Vancouver, Canada, December 2019.

11. J. Lee, N. Bertrand, and C.J. Rozell. A general ADMM framework for optimal transport regularized problems. In *Neural Information Processing Systems (NeurIPS) Workshop, Optimal Transport and Machine Learning*, Vancouver, Canada, December 2019.

12. J. Lee, N. Bertrand, and C.J. Rozell. Parallel unbalanced optimal transport regularization for imaging. In *Neural Information Processing Systems (NeurIPS) Workshop, Optimal Transport and Machine Learning*, Vancouver, Canada, December 2019. Selected for Spotlight presentation.

13. S. Alagapan, V. Tiruvadi, M. Sendi, A. Waters, A. Veerakumar, M. Obatusin, A. Crowell, P. Riva Posse, R. Butera, H. Mayberg, and C. Rozell. Electrophysiological features of subcallosal cingulate cortex in patients with treatment-resistant depression. In *Society for Neuroscience (SfN) Annual Meeting*, Chicago, IL, October 2019.

14. L. Zhang, J. Lee, C. Rozell, and A. Singer. Sub second dynamics of theta gamma coupling in hippocampal CA1. In *Society for Neuroscience (SfN) Annual Meeting*, Chicago, IL, October 2019.

15. G. Canal, A. Massimino, M. Davenport, and C. Rozell. Active embedding search via noisy paired comparisons. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Toulouse, France, July 2019.

16. M. Connor, J. Culpepper, H. Nguyen, and C. Rozell. Natural variation transfer using learned manifold operators. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Toulouse, France, July 2019.

17. J. Lee, E. Dyer, and C.J. Rozell. Cluster-based optimal transport alignment. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Toulouse, France, July 2019. Selected for oral presentation.

18. J. Lee and C.J. Rozell. Fast numerical methods for convex problems with optimal transport regularization. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Toulouse, France, July 2019.

19. M. O'Shaughnessy, M. Davenport, and C. Rozell. Robust incorporation of signal predictions into the sparse bayesian learning framework. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Toulouse, France, July 2019.

20. H. Mayberg, P. Riva Posse, C. Rozell, S. Alagapan, R. Butera, K. Choi, A. Crowell, B. Howell, B. Mahmoudi, M. Obatusin, R. Gross, M. Sendi, V. Tiruvadi, A. Veerakumar, A. Waters, and P. Weiss. Electrophysiological biomarkers to optimize dbs for depression iii. In *The BRAIN Initiative Investigators Meeting*, June 2019.

21. A. Charles, H.L. Yap, D. Yin, and C. Rozell. Rigorous guarantees on sequence memory capacity in recurrent neural networks using randomized dimensionality reduction. In *Theoretical Foundation of Deep Learning*, Atlanta, GA, October 2018.

22. A. Charles, H.L. Yap, D. Yin, and C. Rozell. Short-term sequence memory: Compressive effects of recurrent network dynamics. In *Conference on Cognitive Computational Neuroscience*, Philadelphia, PA, September 2018.

23. M. Connor and C. Rozell. Unsupervised learning of manifold models for neural coding of physical transformations in the ventral visual pathway. In *Conference on Cognitive Computational Neuroscience*, Philadelphia, PA, September 2018.

24. G. Canal, Y. Diaz-Mercado, M. Egerstedt, and C. Rozell. Controlling high-complexity robotic swarms with low-complexity EEG brain-computer interfaces. In *International BCI Meeting*, Pacific Grove, CA, May 2018.

25. A. Willats, M. Bolus, C. Whitmire, G. Stanley, and C. Rozell. State-aware control of neural activity: design & analysis. In *Computational and Systems Neuroscience (COSYNE) Meeting*, Denver, CO, March 2018.

26. J. Lee, A. Charles, N. Bertrand, and C. Rozell. An optimal transport tracking regularizer. In *Neural Information Processing Systems (NIPS) Workshop, Optimal Transport and Machine Learning*, Long Beach, CA, December 2017.

27. M. Bolus, A. Willats, C. Whitmire, C. Rozell, and G. Stanley. Closed loop optogenetic control of thalamocortical activity. In *Society for Neuroscience (SfN) Annual Meeting*, Washington, D.C., November 2017.

28. I. Kolb, J. Lee, A Felouzis, C. Landry, M. Yip, C. Lewallen, W. Stoy, C. Rozell, and C. Forest. The patcherBot: a walk-away automated patch-clamp electrophysiology system. In *Society for Neuroscience (SfN) Annual Meeting*, Washington, D.C., November 2017.

29. A. Alreja, I. Nemenmen, and C. Rozell. Optimal E:I cell ratios in efficient coding models of V1 under volume constraints. In *Society for Neuroscience (SfN) Annual Meeting*, Washington, D.C., November 2017.

30. G. Canal, Y. Diaz-Mercado, M. Egerstedt, and C. Rozell. Controlling high-complexity robotic swarms with low-complexity EEG brain-machine interfaces. In *Society for Neuroscience (SfN) Annual Meeting*, Washington, D.C., November 2017.

31. J. Lee, I. Kolb, C. Forest, and C. Rozell. Cell membrane tracking in live brain tissue with differential interference contrast (DIC) microscopy. In *Society for Neuroscience (SfN) Annual Meeting*, Washington, D.C., November 2017.

32. C. Rozell. Active learning approaches for complex non-invasive brain-computer interfaces. In *Pulsar Workshop*, Lisbon, Portugal, June 2017.

33. C. Rozell, M. Wakin, H.L. Yap, and A. Eftekhari. Stabilizing embedology: Geometry-preserving delay-coordinate maps. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Lisbon, Portugal, June 2017. Selected for oral presentation.

34. A. Charles, J. Lee, N. Bertrand, and C. Rozell. Dynamic filtering with Earth Mover's Distance regularization. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Lisbon, Portugal, June 2017.

35. A. Charles, D. Yin, and C. Rozell. Compression of multiple input streams into recursive neural networks. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Lisbon, Portugal, June 2017.

36. A. Eftekhari, H.L. Yap, M.B. Wakin, and C. Rozell. Stabilizing embedology: When do delay-coordinate maps preserve geometry? In *SIAM Conference on Applications of Dynamical Systems (DS17)*, Snowbird, UT, May 2017. Invited.

37. M. Bolus, A. Willats, C. Whitmire, C. Rozell, and G. Stanley. Closed-loop optogenetic control of neural circuits: Tracking dynamic trajectories of firing rate in vivo. In *Minnesota Neuromodulation Symposium*, Minneapolis, MN, April 2017.

38. N. Bertrand, H.L. Yap, A. Charles, and C. Rozell. Efficient randomized filtering for dimensionality reduction in electrophysiology data. In *Neural Information Processing Systems (NIPS) Workshop, Brains and Bits: Neuroscience Meets Machine Learning*, Barcelona, Spain, December 2016.

39. A. Charles, H.L. Yap, D. Yin, and C. Rozell. Short-term sequence memory in recurrent networks. In *Neural Information Processing Systems (NIPS) Workshop, Brains and Bits: Neuroscience Meets Machine Learning*, Barcelona, Spain, December 2016.

40. M. Connor and C. Rozell. Unsupervised learning of manifold models for neural coding of physical transformations in the ventral visual pathway. In *Neural Information Processing Systems (NIPS) Workshop, Brains and Bits: Neuroscience Meets Machine Learning*, Barcelona, Spain, December 2016.

41. M. Bolus, A. Willats, C. Whitmire, Z. Costello, M. Egerstedt, C. Rozell, and G. Stanley. Closed loop optogenetic control of neural circuits in vivo: Developing design principles for controlling patterns of neural firing rate. In *Society for Neuroscience (SfN) Annual Meeting*, San Diego, CA, November 2016.

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44. C. Rozell and N. Liu. Cortical communication via randomized dimensionality reduction with local synaptic connections. In *Computational and Systems Neuroscience (COSYNE) Meeting*, Salt Lake City, UT, February 2016.

45. C. Rozell and M. Norko. Learning manifold transport operators of 3D transformations from 2D imagery. In *Annual Interdisciplinary Conference*, Breckenridge, CO, January 2016.

46. A. Willats, M. Bolus, C. Whitmire, C. Rozell, and G. Stanley. Closing the loop around firing rate: Following dynamic trajectories. In *Society for Neuroscience (SfN) Annual Meeting*, Chicago, IL, October 2015.

47. A. Charles and C. Rozell. Learning a dynamics dictionary for time-varying sparse signals. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Cambridge, UK, July 2015.

48. C. Rozell, M. Zhu, A. Charles, H.L. Yap, and M. Norko. The role of sparsity in visual perception. In *Proceedings of the Annual International Conference on Biologically Inspired Cognitive Architectures (BICA)*, Boston, MA, November 2014.

49. A. Kressner and C. Rozell. The influence of structure in binary mask estimation error on speech intelligibility. In *International Hearing Aid Research Conference (IHCON)*, Lake Tahoe, CA, August 2014. Selected for oral presentation.

50. A. Charles, C. Rozell, and N. Tufillaro. Sparsity based spectral super-resolution and applications to ocean water color. In *Proceedings of the International Geoscience and Remote Sensing Symposium (IGARSS)*, Quebec City, Quebec, Canada, July 2014.

51. D.C. Millard, C. Rozell, and G.B. Stanley. Coding consequences of activity propagation from sensory and artificial stimulation of neural circuits. In *Computational and Systems Neuroscience (COSYNE) Meeting*, Salt Lake City, UT, February 2014.

52. M. Zhu and C. Rozell. Modeling single-trial V1 population response to dynamic natural scenes. In *NIPS workshop: High-Dimensional Statistical Inference in the Brain*, Lake Tahoe, NV, December 2013.

53. A. Charles and C. Rozell. Stochastic filtering via reweighted-l1. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Lausanne, Switzerland, July 2013.

54. A. Charles, H.L. Yap, and C. Rozell. Using compressed sensing to study sequence memory capacity in networked systems. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Lausanne, Switzerland, July 2013.

55. A.P. Del Giorno, M. Zhu, and C. Rozell. A sparse coding model of V1 produces surround suppression effects in response to natural scene. In *Computational Neuroscience Meeting (CNS)*, Paris, France, July 2013.

56. A. Kressner and C. Rozell. Speech separation using matching pursuit for time-frequency masking. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Lausanne, Switzerland, July 2013.

57. M. Zhu, I. Stevenson, U. Koster, C. Gray, B. Olshausen, and C. Rozell. Sparse coding model captures V1 population response statistics to natural movies. In *Computational Neuroscience Meeting (CNS)*, Paris, France, July 2013.

58. H.L. Yap, A. Charles, and C. Rozell. Compressed sensing radar using recurrent neural networks. In *SONDRA Workshop*, La Londe les Maures, France, June 2013.

59. M. Zhu, I. Stevenson, U. Koster, C. Gray, B. Olshausen, and C. Rozell. Sparse coding model and population response statistics to natural movies in V1. In *Computational and Systems Neuroscience (Cosyne) Meeting*, Salt Lake City, UT, February 2013.

60. A. Charles, H.L. Yap, and C.J. Rozell. Short term memory in neural networks via the restricted isometry property. In *Computational Neuroscience Meeting Workshop on Methods of Information Theory in Computational Neuroscience*, Atlanta, GA, July 2012. Invited talk.

61. M. Zhu and C. Rozell. Biologically realistic excitatory and inhibitory cell properties emerge from a sparse coding network. In *Computational Neuroscience Meeting (CNS)*, Atlanta, GA, July 2012.

62. A. Eftekhari, H.L. Yap, C.J. Rozell, and M.B. Wakin. The restricted isometry property for block diagonal matrices. In *Challenges in Geometry, Analysis and Computation: High Dimensional Synthesis*, New Haven, CT, June 2012.

63. H.L. Yap, A. Charles, and C.J. Rozell. The restricted isometry property for echo state networks with applications to sequence memory capacity. In *Challenges in Geometry, Analysis and Computation: High Dimensional Synthesis*, New Haven, CT, June 2012.

64. A. Charles, H.L. Yap, and C.J. Rozell. Short-term memory capacity in recurrent networks via compressed sensing. In *Janelia Farm Conference on Machine Learning, Statistical Inference, and Neuroscience*, Ashburn, VA, May 2012.

65. M. Zhu and C.J. Rozell. Biophysically accurate non-classical and inhibitory interneuron properties in a sparse coding network. In *Janelia Farm Conference on Machine Learning, Statistical Inference, and Neuroscience*, Ashburn, VA, May 2012.

66. A. Charles, H.L. Yap, and C.J. Rozell. Short-term memory capacity in recurrent networks via compressed sensing. In *Computational and Systems Neuroscience (Cosyne) Meeting*, Salt Lake City, UT, February 2012.

67. M. Zhu, B. Olshausen, and C. Rozell. Biophysically accurate inhibitory interneuron properties in a sparse coding network. In *Computational and Systems Neuroscience (Cosyne) Meeting*, Salt Lake City, UT, February 2012.

68. A. Kressner, D. Anderson, and C. Rozell. Computational auditory models validate the intelligibility benefits of "efficient filters". In *International Symposium on Auditory and Audiological Research (ISAAR)*, Nyborg, Denmark, August 2011.

69. D. Sale, C. Rozell, J. Romberg, and A. Lanterman. A compressive sensing LIDAR architecture. In *Duke Workshop on Sensing and Analysis of High-Dimensional Data (SAHD)*, Durham, NC, July 2011.

70. A. Balavoine, J. Romberg, and C.J. Rozell. Convergence and rate analysis of neural networks for sparse approximation. In *Duke Workshop on Sensing and Analysis of High-Dimensional Data (SAHD)*, Durham, NC, July 2011.

71. A. Charles, B. Olshausen, and C. Rozell. Learning sparse codes for hyperspectral images. In *Duke Workshop on Sensing and Analysis of High-Dimensional Data (SAHD)*, Durham, NC, July 2011.

72. H.L. Yap, J.Y. Park, A. Eftekhari, C.J. Rozell, and M.B. Wakin. Concentration inequalities and isometry properties for compressive block diagonal matrices. In *Duke Workshop on Sensing and Analysis of High-Dimensional Data (SAHD)*, Durham, NC, July 2011.

73. H.L. Yap and C. Rozell. Stable embeddings of time series data. In *Duke Workshop on Sensing and Analysis of High-Dimensional Data (SAHD)*, Durham, NC, July 2011.

74. C. Rozell and M. Zhu. Recent evidence of sparse coding in neural systems. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Edinburgh, Scotland, June 2011.

75. A. Charles and C. Rozell. A hierarchical re-weighted-l1 approach for dynamic sparse signal estimation. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Edinburgh, Scotland, June 2011.

76. H.L. Yap, J.Y. Park, A. Eftekhari, C.J. Rozell, and M.B. Wakin. Concentration inequalities and isometry properties for compressive block diagonal matrices. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Edinburgh, Scotland, June 2011.

77. H.L. Yap and C. Rozell. Stable embeddings of time series data. In *Signal Processing with Adaptive Sparse Structured Representations (SPARS) Workshop*, Edinburgh, Scotland, June 2011.

78. D. Sale, C. Rozell, J. Romberg, and A. Lanterman. Compressive LIDAR conceptual model and simulation results. In *American Society for Photogrammetry & Remote Sensing (ASPRS) Annual Conference*, Milwaukee, WI, May 2011.

79. S. Shapero, D. Brüderle, P. Hasler, and C. Rozell. Sparse approximation on a network of locally competitive integrate and fire neurons. In *Computational and Systems Neuroscience (Cosyne) Meeting*, Salt Lake City, UT, February 2011.

80. M. Zhu and C. Rozell. Population characteristics and interpretations of ncrf effects emerging from sparse coding. In *Computational and Systems Neuroscience (Cosyne) Meeting*, Salt Lake City, UT, February 2011.

81. A. Kressner, C. Rozell, and D. Anderson. Predicting speech quality using a computational auditory model. In *International Hearing Aid Research Conference (IHCON)*, Lake Tahoe, CA, August 2010.

82. M. Zhu and C. Rozell. Sparse coding models demonstrate some non-classical receptive field effects. In *Computational Neuroscience Meeting (CNS)*, San Antonio, TX, July 2010. **Selected for oral presentation.**

83. A. Khosrowshahi, J. Baker, R. Herikstad, S. Yen, C. Rozell, and B. Olshausen. Exploring the statistical structure of large-scale neural recordings using a sparse coding model. In *Computational and Systems Neuroscience (Cosyne) Meeting*, Salt Lake City, UT, February 2010.

84. C.J. Rozell, D.H. Johnson, R.G. Baraniuk, and B.A. Olshausen. Neurally plausible sparse coding via competitive algorithms. In *Computational and Systems Neuroscience (Cosyne) Meeting*, Salt Lake City, UT, February 2007.

85. D.H. Johnson, C.J. Rozell, and I.N. Goodman. Information theory and neuroscience: A tutorial. In *Gulf Coast Consortium Conference on Theoretical & Computational Neuroscience*, Houston, TX, November 2006.

86. B.A. Olshausen, C.J. Rozell, D.H. Johnson, and R.G. Baraniuk. Sparse coding via thresholding and local competition. In *Gordon Research Conference on Sensory Coding and the Natural Environment*, Big Sky, MT, August 2006.

87. D.H. Johnson and C.J. Rozell. Information theory and neuroscience. In *Computational Neuroscience Meeting Workshop on Methods of Information Theory in Computational Neuroscience*, Edinburgh, UK, July 2006.

OPINION PIECES AND EDITORIALS

1. M. Davenport, J. Laska, C. Rozell, and M. Wakin. The Way I See It: The Lessons of Rejection Shouldn't be Overlooked. *Rice University News*, July 15, 2009.

OTHER REPORTS

1. H.L. Yap and C.J. Rozell. On the relation between block diagonal matrices and compressive Toeplitz matrices. Technical report, Georgia Institute of Technology, School of Electrical and Computer Engineering, October 2011.

2. C.J. Rozell. *Distributed redundant representations in man-made and biological sensing systems.* PhD thesis, Rice University, Houston, TX, May 2007.

3. C.J. Rozell. Analyzing dynamics and stimulus feature dependence in the information processing of crayfish sustaining fibers. Master's thesis, Rice University, Houston, TX, May 2002.

KEYNOTE LECTURES

1. Leveraging low-dimensional models for human-in-the-loop machine learning tasks. International Traveling Workshop on Interactions between low-complexity data models and Sensing Techniques (iTWIST), December 2020. Virtual meeting (originally Nantes, France).

2. Neuroengineering and AI: Opportunities and challenges in a future blurring the lines between mind and machine. Stony Brook Young Investigators Review Colloquium, Alan Alda Center for Communicating Science, Stony Brook University, April 2019. Stony Brook, NY.

3. Closing the loop between mind and machine: Building algorithms to interface with brains at multiple scales. Data Science Research Forum, Michigan Institute for Data Science (MIDAS), University of Michigan, December 2017. Ann Arbor, MI.

INVITED LECTURES

1. New data-driven electrophysiology outcome measures and insights into SCC DBS for depression. DBS Think Tank IX, August 2021. Orlando, FL and virtual meeting.

2. Leveraging low-dimensional models for extracting tacit knowledge from humans and machines. Cognition and Brain Sciences and Cognitive Aging Brown Bag Seminar, School of Psychology, Georgia Institute of Technology, March 2021.

3. Computational neuroengineering: Building the algorithmic foundations for interacting with neural circuits. Neuroscience seminar, Cold Spring Harbor Laboratory, October 2019. Cold Spring Harbor, NY.

4. Exploiting the low-dimensional geometry of dynamic natural scenes for efficient coding in sensory systems. MSRI Aspen Computational Neuroscience Meeting: Neural Theories of Cognition, October 2019. Aspen, CO.

5. Advances in online state estimation at the intersection of dynamical systems and dimensionality reduction for computational neuroengineering. Electrical and Computer Engineering Seminar, Rice University, June 2019. Houston, TX.

6. Computational neuroengineering: Building the algorithmic foundations for interacting with neural systems across multiple scales. Institute for Advanced Computational Science Seminar, Stony Brook University, April 2019. Stony Brook, NY.

7. Dynamical systems and dimensionality reduction in computational neuroengineering. Electrical Engineering Seminar Series, Harvard University, March 2019. Cambridge, MA.

8. Computational neuroengineering: Building the algorithmic foundations for interacting with neural systems across multiple scales. Joint Biomedical Engineering and Electrical & Computer Engineering Departmental Seminar, Boston University, February 2019. Boston, MA.

9. Computational neuroengineering: Building the algorithmic foundations for interacting with neural systems across multiple scales. Preston M. Green Electrical & Systems Engineering Seminar, Washington University in St. Louis, January 2019. St. Louis, MO.

10. Geometry-preserving embeddings for understanding dynamical systems: Recurrent networks and delay embeddings. Nonlinear Science & Mathematical Physics Seminar, School of Physics, Georgia Institute of Technology, May 2018. Atlanta, GA.

11. Closed-loop optogenetic control in vivo: tracking states. Computational and Systems Neuroscience (COSYNE) Workshop on Closed-loop control of neural systems and circuits for scientific discovery, March 2018. Breckenridge, CO.

12. Closing the loop between mind and machine: Building algorithms to interface with brains at multiple scales. SINE Center for Research in Signals and Networks, Colorado School of Mines, March 2018. Golden, CO.

13. Efficient coding theories for neural systems under biophysical constraints. Vision seminar, Penn Vision Research Center, University of Pennsylvania, March 2018. Philadelphia, PA.

14. Exploiting time-varying low-dimensional signal structure. Redwood Center for Theoretical Neuroscience, University of California, Berkeley, February 2018. Berkeley, CA.

15. Building the algorithmic foundations for interfacing, understanding and exploiting neural systems. Kavli Institute of Theoretical Physics program on Physics of Hearing: From Neurobiology to Information Theory and Back, July 2017. Santa Barbara, CA.

16. Dimensionality reduction as a model of efficient coding in sensory systems. Kavli Institute of Theoretical Physics program on Physics of Hearing: From Neurobiology to Information Theory and Back, July 2017. Santa Barbara, CA.

17. Optimal sensory coding theories for neural systems under biophysical constraints. Theoretical Neuroscience Day, Algorithms and Randomness Center and GT Neural Engineering Center, Georgia Institute of Technology, March 2017. Atlanta, GA.

18. Efficient coding with biophysical constraints can explain properties of networks and neural responses. In *Computational and Systems Neuroscience (COSYNE) Workshop on New Methods for Understanding Neural Dynamics and Computation*, Salt Lake City, UT, February 2017.

19. Open- and closed-loop optogenetic stimulation for injecting sensory information in vivo. Bernstein Sparks Workshop: Naturalistic integration of information from external stimulation into the ongoing neuronal activities of the brain, Hanse-Wissenschaftskolleg Institute for Advanced Study, October 2016. Delmenhorst, Germany.

20. Building models of sensory neural coding and developing tools to test them. Institute for Neuroscience Seminar Series, University of Texas-Austin, September 2016. Austin, TX.

21. Moving toward in vivo closed-loop optogenetic control of neural activity. In *American Control Conference (ACC) Workshop on Modeling, Estimation and Control Across Scales in Neuroscience*, Boston, MA, July 2016.

22. Exploiting low-dimensional geometric structure in high-dimensional data: lessons from neuroscience for machine learning. Center for Nonlinear Studies Seminar, Los Alamos National Laboratory, June 2016. Santa Fe, NM.

23. Exploiting the low-dimensional structure of dynamical system attractors. In *Computational and Systems Neuroscience (COSYNE) Workshop on Dimensionality reduction for the analysis and interpretation of high-dimensional neural datasets*, Salt Lake City, UT, February 2016.

24. The big (BRAIN) data cometh: Low-dimensional models for understanding neural systems. Joint Biomedical Engineering and Center for Systems Neuroscience Seminar, Boston University, January 2016. Boston, MA.

25. The big (BRAIN) data cometh: Low-dimensional models for understanding neural systems. Systems, Information, Learning and Optimization (SILO) seminar, Wisconsin Institute for Discovery, University of Wisconsin, November 2015. Madison, WI.

26. Dimensionality reduction as a model of efficient coding in the visual pathway. Neuroscience Workshop on Dimensionality Reduction Methods, Center for Mind, Brain, and Culture, Emory University, October 2015. Atlanta, GA.

27. Optimal sensory coding theories for neural systems under biophysical constraints. *Conference on Sensing, information and decision at the cellular level*, Abdus Salam International Center for Theoretical Physics (ICTP), July 2015. Triste, Italy.

28. Dynamical systems and low-dimensional signal models. ECE Department seminar, Carnegie Mellon University, March 2015. Pittsburgh, PA.

29. Optimal sensory coding under constraints. Biomedical Engineering Department seminar, Johns Hopkins University, March 2015. Baltimore, MD.

30. Dimensionality reduction with constrained randomized operators. CDA/Skytree Machine Learning seminar series, April 2014. Atlanta, GA.

31. Signal processing for computational neuroscience. IEEE Atlanta Chapter Signal Processing Society lecture, April 2014. Atlanta, GA.

32. Exploring optimal sensory coding theories for neural systems under biophysical constraints. ECE Department seminar, Rice University, March 2014. Houston, TX.

33. Exploring optimal sensory coding theories under biophysical constraints. Computational Neuroscience seminar, University of Texas-Austin, March 2014. Austin, TX.

34. On the move: Dynamical systems for modeling, measurement and inference in sparse signal models. Institute for Computational Engineering and Sciences seminar, University of Texas-Austin, March 2014. Austin, TX.

35. Exploring optimal sensory coding theories under biophysical constraints. Computational Neuroscience Reading Group seminar, University of Michigan, February 2014. Ann Arbor, MI.

36. On the move: Dynamical systems for modeling, measurement and inference in sparse signal models. Communications and Signal Processing seminar, EECS Department, University of Michigan, February 2014. Ann Arbor, MI.

37. On the move: Dynamical systems for modeling, measurement and inference in compressed sensing. In *Matheon Workshop on Compressed Sensing and its Applications*, Berlin, Germany, December 2013.

38. How can efficient neural coding be exploited for neural interfacing? Brain Workshop: Enabling Health through Neurotechnologies, October 2013. Atlanta, GA.

39. Tracking time-varying sparse signals. In *Advanced Modem Technology Forum, Qualcomm Technologies, Inc.*, San Diego, CA, May 2013.

40. Sparse coding in brains and machines: exploiting insight from neuroscience to improve data analysis with sparsity models. Research Seminar, Qualcomm Technologies, Inc., April 2013. San Diego, CA.

41. Dynamical systems for modeling, measurement and inference with sparse signals. *Electrical and Computer Engineering Seminar*, Duke University, October 2012. Durham, NC.

42. Recursive estimation of dynamic signals with sparsity models via re-weighted l1 minimization. In *Janelia Farm Conference on Machine Learning, Statistical Inference, and Neuroscience*, Ashburn, VA, May 2012.

43. Spectral super-resolution of hyperspectral images. In *SIAM Conference on Imaging Science*, Philadelphia, PA, May 2012.

44. Sparse coding networks and compressed sensing in neural systems. *INC Chalk Talk Series*, Institute for Neural Computation, University of California at San Diego, October 2011. La Jolla, CA.

45. Sparsity models for hyperspectral imaging and compressive sensing LIDAR. *CIS Seminar Series*, Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology, October 2011. Rochester, NY.

46. Sparsity models and constrained systems: What does neuroscience have to do with compressed sensing? *Communications Seminar*, Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, April 2011. Urbana, IL.

47. Compressed sensing design of LIDAR sensors. United States Geospatial Intelligence Foundation GEOINT Symposium, November 2010. New Orleans, LA.

48. Compressed sensing design of LIDAR sensors. NGA Compressive Sensing Workshop, June 2010. McLean, VA.

49. Network models of sparse coding and nonclassical receptive field effects. NSF Workshop on Hybrid Neuro-Computer Vision Systems, April 2010. New York, NY.

50. Sparse representation for image analysis and understanding. Day-long short course attended by representatives from several government agencies, January 2009. Washington, D.C.

51. Low-dimensional models in computational neuroscience and signal processing. *Center for Signal and Image Processing Seminar*, ECE Department, Georgia Institute of Technology, October 2008. Atlanta, GA.

52. Analog and digital sparse approximation with applications to compressed sensing. In *2008 SIAM Conference on Imaging Science*, San Diego, CA, July 2008. Invited talk.

53. Neural architectures for sparse approximation. *Networking, Communications, and DSP Seminar*, EECS Department, UC Berkeley, April 2008. Berkeley, CA.

54. Neural architectures for sparse approximation. In *Information Theory and Applications Workshop*, La Jolla, CA, January 2008. Invited talk.

55. When bits meet brains: Locally competitive algorithms for sparse approximation. *Electrical and Computer Engineering Seminar*, McGill University, May 2007. Montreal, Canada.

56. When bits meet brains: Locally competitive algorithms for sparse approximation. *Electrical and Computer Engineering Seminar*, Georgia Institute of Technology, May 2007. Atlanta, GA.

57. Neurally plausible sparse coding via locally competitive algorithms. *Center for the Neural Basis of Cognition Seminar*, Carnegie Mellon University, April 2007. Pittsburgh, PA.

58. When bits meet brains: Locally competitive algorithms for sparse approximation. *Electrical Engineering Seminar*, UCLA, March 2007. Los Angeles, CA.

59. Signal processing and electronic music. *IEEE Student Chapter Undergraduate Lecture Series*, Rice University, January 2006. Houston, TX.

60. Measuring information consequences of signal processing. *Research Seminar*, Dolby Laboratories, June 2004. San Francisco, CA.