

Don Herrick Johnson

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- Birthplace* Mt. Pleasant, Texas, July 9, 1946
- Family* Married, two children, two grandchildren
- Education* S.B.,S.M.(1970), E.E.(1971), Ph.D.(1974), Electrical Engineering, MIT
- Awards & Honors* Meritorious Service Award, IEEE Signal Processing Society (2001)
 IEEE Millennium Medal (2000)
 Distinguished Lecturer, IEEE Signal Processing Society (2000-01)
 Fellow, IEEE (1990)
 George R. Brown Award for Excellence in Teaching (1988)
 George R. Brown Award for Superior Teaching (1982,1985,1986,1995,2005)
 Nicolas Salgo Distinguished Teacher Award (1983)
 American Society for Engineering Education Fellowship (1980)
 Supervised Investors' Award for Teaching (1970)
 Tau Beta Pi, Eta Kappa Nu
- Positions* 2008-present J.S. Abercrombie Professor Emeritus, Department of Electrical & Computer Engineering, Rice University
 2005 Visiting Professor, International University Bremen
 2000-08 J.S. Abercrombie Professor, Department of Electrical & Computer Engineering, Rice University
 1985-present Adjunct Professor, Neurobiology & Anatomy at The University of Texas Medical School
 1999-2004 Chair, Department of Electrical & Computer Engineering, Rice University
 1987-2000 Professor, Rice University
 1994-97 Associate Dean for Academic Affairs, George R. Brown School of Engineering
 1992-98 Co-Founder and Board Member, Modulus Technologies, Inc.
 1987-93 Executive Director, Rice Computer and Information Technology Institute
 1989-90 Acting Executive Director, Center for Research on Parallel Computation
 1986-87 Visiting Scientist, MIT Lincoln Laboratory (Sabbatical)
 1982-87 Associate Professor, Rice University
 1977-82 Assistant Professor, Department of Electrical Engineering, Rice University
 1980 Visiting Summer Scientist, Naval Ocean Systems Center
 1977-79 Visiting Summer Scientist, MIT Lincoln Laboratory
 1974-77 Staff Member, MIT Lincoln Laboratory
 1971-77 Research Associate, Massachusetts Eye and Ear Infirmary
- Consulting* 1977-93 MIT Lincoln Laboratory
 1987 Interstate Electronics
 1984-85 Federal Systems Division, IBM

**Research Grants and Contracts
Current Support**

NSF-CCF-1048344	Counting Van Gogh and Vermeer	January, 2011 12 months	\$20,790
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Past Support

Halliburton Energy Services	Optimal Borehole Communications Development	July, 2002 36 months	\$280,000
NSF CCR-0105558	Information processing theory and applications	July, 2001 3 years	\$300,600
NIH MH60861	Only neurons read neural codes	March, 2000 3 years	\$450,000
TATP	Implementation of W-CDMA networks: Advanced mobile and basestation receiver prototyping	Jan, 2000 2 years	\$211,148
NSF IBN-9815056	Collaborative Research: Studies of Binaural Hearing	Aug 1998 4 years	\$100,000
Signal Processing Society	Signal Processing Society Experiment in Electronic Publication	May 1, 1999–Aug. 31, 2000	\$33,536
USA Contract 2970450178	Real-Time Vigilance Using Type-Based Classification	June 1998 6 months	\$47,346
NSF CCR-9628236	Adaptive Receivers for Uncertain, Time-Varying Channels	Aug 1996 3 years	\$186,542
NSF DUE-9551617	Collaborative Signal Processing Education on the Internet	May 1995 2 years	\$39,140
NIMH MH46453	Neural Fractal Activity in Auditory Spatial Localization	March 1991 6 years	\$535,724
NSF IBN-9309263	Collaborative Research: Studies of Binaural Processing	Aug 1993 4 years	\$73,255
NSF MIP-9301646	Databases for Signal Processing Research	May 1993 48 months	\$60,000
TATP 999903–095	Remote Operations Technology: Ground Based Space Applications (co-investigator)	Jan 1994 2 years	\$96,112
ONR N00014-92-J-1558	Simulation of Excitatory/Inhibitory Interactions in Single Auditory Neurons	April 1992 2 1/2 years	\$193,500
TATP 999903–267	Distributed Robotics Systems Integration with Fault Tolerance (co-investigator)	Dec 1991 2 1/2 years	\$125,000

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August 2010

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NASA/JSC NAG 9-461	NASA/Universities Telerobotics Laboratory Network Development (co-investigator)	Sept 1990 4 years	\$185,000
NASA/JSC NAG 9-601	Improvements to the TelRIP Telerobotics Development Environment	July 1992 12 months	\$25,000
ONR N00014-89-J-3152	Analysis of Temporal Symmetry in Non-Gaussian Random Fields	Sept 1989 3 years	\$144,579
NIH-NINCDS NS20964	Statistical Analyses of Lateral Superior Olive Network	July 1987 3 years	\$118,208
TATP 2982	Real-Time Machine Vision for Space Robotics (with Rui DeFigueiredo)	June 1988 2 years	\$375,791
IBM Federal Systems Division	Algorithms for Efficient Array Processing (co-investigator)	Aug 1984 1 year	\$24,961
NIH-NINCDS NS20964	Statistical Analyses of Lateral Superior Olive Network	July 1984 3 years	\$135,233
NSF ECS-8405435	Specialized Research Equipment: Computer and Graphics Facility for Research in System and Signal Theory (co-investigator)	July 1984 18 Months	\$64,786
NSF	\mathbb{R}^n : An Experimental Computer Network to Support Numerical Computation (co-investigator)	June 1982 5 years	\$2,336,757
ONR N00014-81-K-0565	Improved Bearing Resolution for Passive Sonar Arrays	June 1981 3 years	\$124,846
NSF BNS-8022469	Mathematical Modeling of Single Unit Studies of Binaural Interactions	May 1981 18 months	\$18,992
NSF ENG-7811507	Signal Analysis and Image Processing Equipment Grant (with R.J.P. deFigueiredo and others)	Aug 1978	\$62,200

University Teaching

CAAM 210	Introduction to Engineering Computation (developed)
ELEC 241	Electrical Circuits
ELEC 241	Fundamentals of Electrical Engineering I (developed)
ELEC 301	Network and Systems Theory
ELEC 430	Communication Theory and Systems
ELEC 431	Digital Signal Processing
ELEC 491/492	Senior Honors Projects (developed)
ELEC 530	Digital Communication Theory, Detection Theory (developed)
ELEC 531	Statistical Signal Processing
ELEC 535	Information Theory
ELEC 632	Speech Signal Processing (developed)
ELEC 697	Array Signal Processing (developed)
ENGI 202	Information Science and Technology (developed)

Current Graduate Students

Eva Dyer Fusion frames and cortical columns (M.S.; co-advised with Rich Baraniuk)

Theses Supervised

1. Ilan N. Goodman. *Performance Limits for Brain-Machine Interfaces*. Ph.D. Thesis, Rice University, 2010.
2. Michael A. Lexa. *Sequential Quantization for Classification: The Impact of Structure and Nonparametric Estimates*. Ph.D. Thesis, Rice University, 2008.
3. Jyoti Uppuluri. *Selecting Models that Describe Neural Population Responses*. M.S. Thesis. Rice University, 2007.
4. Christopher J. Rozell. *Distributed Redundant Representations in Man-made and Biological Sensing Systems*. Ph.D. Thesis, Rice University, 2007.
5. Mahsa Mermarzadeh. *Optimal Borehole Communications using Multicarrier Modulation*. Ph.D. Thesis, Rice University, 2006.
6. Mona Sheikh. *Fundamental limits in spike sorting*. M.S. Thesis, Rice University, 2006.
7. Sinan Sinanović. *Limits of Acoustic Waveguide Communication*. Ph.D. Thesis, Rice University, 2006.
8. Ilan Goodman. *Analyzing statistical dependencies in neural populations*. M.S. Thesis, Rice University, 2004.
9. Christopher Rozell. *Analyzing dynamics and stimulus feature dependence in the information processing of crayfish sustaining fibers*. M.S. Thesis, Rice University, 2002.
10. Sinan Sinanović. *Toward a theory of information processing*. M.S. Thesis, Rice University, 2000.
11. Raymond L. Walker. *Change detection using types for non-stationary processes*. M.S. Thesis, Rice University, 1999.
12. Charlotte M. Gruner. *Quantifying Information Coding Limits in Sensory Systems*. Ph.D. Thesis, Rice University, 1998.
13. Yuan Kang Lee. *Empirical Detectors for Spread Spectrum, Code Division Multiple Access Communication*. Ph.D. Thesis, Rice University, 1998.
14. Lin Yue. *Universal Classification for Wireless CDMA Communications*. Ph.D. Thesis, Rice University, 1998.
15. Owen E. Kelly. *Intersymbol Interference Equalization by Universal Likelihood*. Ph.D. Thesis, Rice University, 1996.

16. Charlotte M. Gruner. Statistical and biophysical modeling of binaural interaction in the lateral superior olive. M.S. Thesis, Rice University, 1996.
17. Jeffrey D. Smith. Statistical characterization of sensors for sensor fusion. M.S. Thesis, Rice University, 1995.
18. Chong Lin Leang. On models of signal processing by neuronal patterns. M.S. Thesis, Rice University, 1995.
19. Lin Yue. Optimal binaural processing based on point-process models of preprocessed cues. M.S. Thesis, Rice University, 1995.
20. Dongmei Li. Signal constellation design for Gaussian and Non-Gaussian channels. M.S. Thesis, Rice University, 1995.
21. Owen E. Kelly. Analysis of long-range dependence in auditory-nerve fiber recordings. M.S. Thesis, Rice University, 1993.
22. Darren S. Melton. Dual-frequency modulation and range disambiguation in laser rangefinding systems. M.S. Thesis, Rice University, 1993.
23. Miriam Zacksenhouse. *Point-Process Modeling of Excitatory/Inhibitory Interactions in LSO Neurons*. Ph.D. Thesis, Rice University, 1993.
24. Steven Reynolds. *Building a Map for Robot Path Planning by Fusing Video Images and Laser Rangefinder Data*. Ph.D. Thesis, Rice University, 1993.
25. Lawrence A. Ciscon. *A Communications and Interaction Model for Intelligent Cooperating Robots*. Ph.D. Thesis, Rice University, 1993.
26. Anand G. Dabak. *A Geometry for Detection Theory*. Ph.D. Thesis, Rice University, 1992.
27. P. Srinivasa Rao. *Robust Continuous-Time Detection in Linear Process Noise*. Ph.D. Thesis, Rice University, 1992.
28. Yuan Kang Lee. Nonparametric prediction of mixing time series. M.S. Thesis, Rice University, 1992.
29. Sandeep Sibal. Optimal control of a class of real-time computational systems. M.S. Thesis, Rice University, 1990.
30. Anand R. Kumar. *Modeling and Analyzing Fractal Point Processes*. Ph.D. Thesis, Rice University, 1990.
31. Anand G. Dabak. Binaural localization using interaural cues. M.S. Thesis, Rice University, 1990.
32. Douglas B. Williams. *Robust Methods Tailored for Non-Gaussian Narrowband Array Processing*. Ph.D. Thesis, Rice University, 1989.
33. P. Srinivasa Rao. Non-Gaussian Markov time series. M.S. Thesis, Rice University, 1988.
34. Douglas B. Williams. Eigenvalue analysis for source detection with narrowband passive arrays. M.S. Thesis, Rice University, 1986.
35. Darel A. Linebarger. *Parametric and Non-Parametric Methods of Improving Bearing Estimation in Narrowband Passive Sonar Systems*. Ph.D. Thesis, Rice University, 1986.
36. Anand R. Kumar. A distribution-free model order estimation technique using entropy. M.S. Thesis, Rice University, 1986.
37. Darel A. Linebarger. Point process models for discharge patterns of single units in the lateral superior olive of the cat. M.S. Thesis, Rice University, 1984.
38. Stuart R. DeGraaf. *Optimal Arrays for Narrowband Beamforming*. Ph.D. Thesis, Rice University, 1984.
39. Darcy P. McGinn. Estimation of the parameters of all-pole sequences corrupted by additive observation noise. M.S. Thesis, Rice University, 1983.
40. Stuart R. DeGraaf. The effect of coherent signals on the capability of array processing algorithms to resolve source bearings. M.S. Thesis, Rice University, 1982.

41. Ananthram Swami. Estimation techniques in non-stationary renewal processes. M.S. Thesis, Rice University, 1980.

Post-Doctoral Fellows and Research Scholars

Miriam Zacksenhouse	1993–94	Computational modeling of LSO and auditory-nerve fiber discharge patterns
Nirmal Warke	1996–97	Type-based signal processing
Courtney Lane	1997	Type-based analysis of pitch encoding
	2003–2005	Information theory and sensorineural processing
Charlotte Gruner	1998–99	Information theoretic analyses of neural responses to sound

Undergraduate Research

Lucia Sun, Jash Guo	2008–09	Canvas Weave Matching for Master Paintings
Robert Ortman	2007	Evaluation of a Video Coder based on Competitive Algorithms
Elizabeth McDonald	2004	Simulation of Discrete Multi-Tone Communications
Michelle Lloyd	2002–3	Analysis of a neural information processing system
Purushottam Nagarkar	2001	Information processing software
Will Ray	2000–1	Optimal information coding by neural populations
Daniel Ma	1999–2000	Information analysis of neural populations
Wei Wang	1999	Symbolic signal processing
Eric Chi	1998	Simulation of neural discharge patterns
Chandran Seshagiri	1997	Information analysis of neural populations
Courtney Lane	1996	Analysis of neural data
Jessica Pistole	1996	Type-based detection for waveform channels
Raymond Walker	1996	Type-based detection for optical channels
Shermay Yang	1996	Adaptive type-based detectors
Tracy Kitto	1995	Simulation of auditory-nerve fiber responses
Michael Harms	1994	Modeling the LSO neuron: Inhibition of the excitatory response
Nabeel Shami	1993	Web-based information base for signal processing
David Becker	1992	Non-Gaussian time series
Elizabeth Zertuche	1991	Biophysical simulation of LSO responses
Michael Pelton	1991	Biophysical simulation of LSO responses
Nageen Himayat	1989	Sensor fusion theory
Stephanie Kosinski	1988	Statistics of linear predictive spectral analysis
Chien-Wen Tseng	1988	Non-Gaussian time series

University Service

University Committees

2007	Member, BP University Learning Partner Team
2005–2008	Faculty Advisory Committee, Rice Alliance for Technology and Entrepreneurship
2003	Member, Ad Hoc Committee on the Honor Council
1999–2004	Chair, Department of Electrical & Computer Engineering
1999–2003	Steering Council, Rice Alliance for Technology and Entrepreneurship
1998–2000, 1991–95	Member, DeLange Conference Steering Committee
1998–99	Member, Task Force on Graduate Teaching
1995–98	Member, Undergraduate Curriculum Committee
1996–97	School of Engineering Strategic Planning Committee: Chair, Undergraduate Subcommittee
1997	Chair, Faculty Council Ad Hoc Grievance Committee
1995–97	Mechanical Engineering & Materials Science Chair Search Committee: Member 1995–96; Chair 1996–97
1995–96	Member, Associate Provost Search Committee
1993–95	Member, Fringe Benefits Committee
1991–93	Speaker of Faculty Council
1989–93, 1980–82	Member, University Council
1978–80	Faculty Council
1988–90	Chair, <i>Ad Hoc</i> Committee on High-Performance Computing
1987–89	Computer Planning Board, Research Subcommittee
1987–89	Committee on Undergraduate Teaching
1987–88	Committee for Science/Engineering Foundation Course
1987–88	Rice Identity Committee
1985–86	University Computer Committee
1984–85	Chair, <i>Ad Hoc</i> Advisory Committee on Microcomputer Support
1984–85	Faculty Representative, Apple University Consortium
1983–84	<i>Ad Hoc</i> Committee on Audio-Visual Facilities
1982–83	Admissions Committee

Engineering Committees

2005–2008, 1998–2004	Chair and Co-Chair, ECE Department Faculty Search Committee
2005–2008, 1998–99, 1987–89, 1985–86	Chair and Member, ECE Department Undergraduate Committee
1998–99, 1988–94	Computer Committee, Department of Electrical & Computer Engineering
1987–92, 1985–86, 1979–82	Member, Owlnet Steering Committee
1992–95	Member, Computational Science & Engineering Committee
1992–95	Chair, Engineering Curriculum Committee
1990–94	Member, ECE Department Undergraduate Committee

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1979–93 Faculty Advisor, Tau Beta Pi
 1989–90 Engineering Curriculum Committee
 1987–88 Computer Science Department Facilities Committee
 1984–87 Faculty Advisor, Society of Women Engineers
 1980–86 Faculty Advisor, Eta Kappa Nu
 1984–86, Facilities Co-manager, CER Research Computers
 1982–83

Miscellaneous

2007–08 Acting Associate of Lovett College
 1978–91 Associate of Will Rice College
 1988–91 Engineering Division Advisor, Will Rice College
 1982–87 Ad hoc Committee on Statistics

Professional Service

2010–present IEEE History Committee
 2008–10 Chair, Computational Neuroscience Meeting Program Committee
 2007–present Lensing Oversight Committee, IEEE Signal Processing Society
 2003–08 IEEE Kilby Medal Committee; Chair 2006—2007
 2003–06 IEEE Signal Processing Society Biomedical Image and Signal Processing Technical Committee
 2003–2006 Computational Neuroscience Meeting Program Committee
 2002–04 Awards Board, IEEE Signal Processing Society
 2002–03 Technical Committee, Statistical Signal Processing Workshop, 2003
 2001–02 Special Session Chair, ICASSP 2002
 1993–present Director, Signal Processing Information Database
 1999–2000 Signal Processing Society Electronic Publication Experiment
 1998–2000 Co-Chair, Ninth Digital Signal Processing Workshop, held October, 2000
 1992–2000 Editorial Board: *Applied Signal Processing*
 1994–99 President-Elect, President, Past-President, IEEE Signal Processing Society
 1998–2003, IEEE Signal Processing Society Signal Processing Theory and Methods Technical Committee:
 1985–95 Vice-Chair: 1987–90; Chair: 1990–93; Web Master: 1998–2003
 1996 Panel Chair, Workshop on Future Directions of Signal Processing
 1992–94 IEEE Fellows Committee
 1989–93 Associate Editor, *IEEE Transactions on Signal Processing*
 1989–92 Signal Processing Society Local Chapters Coordinator
 1991 Advisory Panel, NSF Circuits and Signal Processing Program
 1989–91 Member of AdCom, IEEE Signal Processing Society
 1986–91 Member, Steering Committee, ASEE Continuing Education Program for Engineering Faculty
 1986–91 IEEE Paper Awards Committee (Chair: 1988–90)
 1987–89 Chair, *Symposium on Basic Research in a Clinical Environment*. Held July 5–7, 1989
 1989–90 Chair, Fourth Digital Signal Processing Workshop Committee. Held September, 1990
 1986, 1988 Program Co-Chair, Digital Signal Processing Workshop

Short Courses

1993	<i>Array Signal Processing</i> (with D.E. Dudgeon)	ICASSP '93 Tutorial
1988	<i>Engineering Workstations</i>	ASEE Continuing Education Program for Engineering Faculty
1983	<i>Array Signal Processing</i> (with T.W. Parks)	IBM Federal Systems Division, Manassas, VA

Patents

U.S. Patent 20050024232 (Application)	March 3, 2008	S. Sinanovic, D.H. Johnson, W.R. Gardner, L. Gao, C.A. Robbins Training for directional detection
U.S. Patent 20060239336 (Application) European Patent WO2006116134 (Application)	October 26, 2006	R.G. Baraniuk, D.Z. Baron, M.F. Duarte, I.N. Goodman, D.H. Johnson, K.F. Kelly, C.C. Lane, J.N. Laska, D. Takhar, M.B. Wakin Method and apparatus for compressive imaging device
U.S. Patent 7,783,459	Aug. 24, 2010	C.J. Rozell, D.H. Johnson, R.G. Baraniuk, B.A. Olshausen, R.L. Ortman Neural circuit for computing sparse codes
U.S. Patent 7,324,010	Jan. 29, 2008	W.R. Gardner, D.H. Johnson, V.V. Shah Acoustic telemetry systems and methods with surface noise cancellation
U.S. Patent 7,265,682	Sept. 4, 2007	M. Memarzadeh, W.R. Gardner, D.H. Johnson Joint source-channel coding for multicarrier modulation
U.S. Patent 7,158,446	Jan. 2, 2007	W.R. Gardner, S. Sinanović, D.H. Johnson, V.V. Shah Directional acoustic telemetry receiver
U.S. Patent 5,812,779	Sept. 22, 1998	L.A. Ciscon, J.D. Wise, Jr., D.H. Johnson Storage medium and system for managing and distributing data objects of different types between computers connected to a network
U.S. Patent 5,634,010	May 27, 1997	L.A. Ciscon, J.D. Wise, Jr., D.H. Johnson Managing and distributing data objects of different types between computers connected to a network

Papers Selected for Special Recognition

1. D.H. Johnson and S.R. DeGraaf. Improving the resolution of bearing in passive sonar arrays by eigenvalue analysis, 1982. Selected for inclusion in *Multidimensional Digital Signal Processing*, (IEEE Press, 1986).
2. D.H. Johnson and S.R. DeGraaf. Improving the resolution of bearing in passive sonar arrays by eigenvalue analysis, 1982. Selected for inclusion in *Modern Spectrum Analysis II*, edited by S.B. Kesler (IEEE Press, 1986).
3. D.H. Johnson. The application of spectral estimation methods to bearing estimation problems (invited paper). *Proc. IEEE*, 70(9): 1018–1028, 1982.

Invited and Featured Presentations

1. D.H. Johnson, C.R. Johnson, Jr. and E. Hendriks. Signal Processing and Analyzing Works of Art. Invited talk, *SPIE Optics and Photonics*, 7798–15, San Diego, August 2010.
2. D.H. Johnson, C.R. Johnson, Jr. and E. Hendriks. Signal Processing and Analyzing Works of Art. Invited talk, *Sparsity and Modern Mathematical Methods for High Dimensional Data*, Brussels, Belgium, April 2010.
3. D.H. Johnson. Information theory and neuroscience. Invited talk, ECE Department, University of Illinois, April 2, 2009.
4. D.H. Johnson. Information Theory and Neural Information Processing. Invited talk in Los Alamos National Laboratory's Information Science and Technology Center) Speaker Series, March 11, 2009.
5. D.H. Johnson, C.R. Johnson, Jr., A.G. Klein, W.A. Sethares, H. Lee and E. Hendriks. A thread counting algorithm for art forensics. *DSP Workshop*, Marco Island, Florida, January 2009.
6. D.H. Johnson and I.N. Goodman. Information theoretic analysis of neural populations. Workshop on Information Theory Methods in Neuroscience, CNS'08, Portland, Oregon, July 2008.
7. D.H. Johnson. Information theory and neuroscience: Why is the intersection so small? Invited talk, Information Theory Workshop, Porto, Portugal, May 2008.
8. Past work related to VISEN: Optimal digital communication and theory of information processing. Workshop on Probabilistic and Resilient Architectures for Nanoscale Computing (PRANACOMP), Rice University, April 2008.
9. I.N. Goodman and D.H. Johnson. Information theoretic bounds on neural prosthesis effectiveness: The importance of spike sorting. *ICASSP 2008*, Las Vegas, Nevada, April 2008.
10. D.H. Johnson and I.N. Goodman. Information Theoretic Analysis of the Effectiveness of Neural Prosthetics. Invited talk, Neural Prosthetics Workshop, CNS 2007 Meeting, Toronto, July, 2007.
11. D.H. Johnson. Correlations in Populations: Information-Theoretic Limits. Invited talk, Cosyne Workshop: *What role does spike synchrony or correlation play in sensory processing?*, The Canyons, Utah, February, 2007.
12. D.H. Johnson, C.J. Rozell, and I.N. Goodman. Information Theory and Neuroscience: A Tutorial. Invited talk, Gulf Coast Consortium, Rice University, November 11, 2006.
13. D.H. Johnson, C.J. Rozell, and I.N. Goodman. Information Theory and Neuroscience: A Tutorial. Information Theory Workshop, CNS 2006 Meeting, Edinburgh, July, 2006.
14. D.H. Johnson. Limits of Neural Population Coding. Invited talk, Department of Biomedical Engineering, University of Houston, December 5, 2003.
15. D.H. Johnson. From Signal to Information Processing. Invited Talk, Harvard University, March 7, 2003.
16. D.H. Johnson. From Signal to Information Processing. Invited talk, Statistics Department, Rice University, February 17, 2003.

17. Information processing performance limits of neural populations. Invited presentation. *Neural Coding Workshop*, Mathematical Biosciences Institute, Columbus, Ohio, February 10–14, 2003.
18. D.H. Johnson and W. Ray. Optimal stimulus coding by populations. Featured contributed talk at *Computational Neuroscience '01*, Asilomar, CA, July 1–6, 2001.
19. D.H. Johnson. Information Processing: Data Analysis and Theory. National Academy of Science Workshop on Dynamical Modeling of Complex Biomedical Systems. Washington, DC, April 26–28, 2001.
20. D.H. Johnson. Information theory and neural coding. The David Bodian Seminar in Neuroscience, Johns Hopkins University, March 12, 2001.
21. D.H. Johnson. A theory of information processing. IMA Workshop on Multimedia Processing. Minneapolis, MN, January, 2001.
22. D.H. Johnson. DSP in Rice University's Electrical and Computer Engineering curriculum (invited paper). *First Signal Processing Education Workshop*, Hunt, Texas, October, 2000.
23. D.H. Johnson. Information-theoretic analysis of neural recordings. Invited talk, Univ. Michigan, May 9, 2000.
24. D.H. Johnson. From signal processing to information processing. Invited talk, Electrical Engineering Dept., University of Illinois at Chicago, May 8, 2000.
25. D.H. Johnson. From signal processing to information processing. Signal Processing Society Distinguished Lecture, Philadelphia Chapter, April 18, 2000.
26. D.H. Johnson and J.D. Wise, Jr. Creating introductory electrical engineering courses. Invited talk, Department of Electrical Engineering, Southern Methodist University, September 14, 1999.
27. D.H. Johnson, C.M. Gruner, R.M. Glantz. Quantifying information transfer in spike generation. Featured contributed talk at *Computational Neuroscience '99*, Pittsburgh, PA, July 18–25, 1999.
28. D.H. Johnson. Signal encoding in discharge patterns of the auditory system. IMA Workshop on Audition, University of Minnesota, Minneapolis, MN, March, 1999.
29. D.H. Johnson. Toward a theory of signal processing (invited paper). *Information Theory Workshop on Detection, Estimation, Classification and Imaging*, Santa Fe, NM, 24–26, February 1999.
30. D.H. Johnson, S. Yang, and J.L. Pistole. Adaptive reception for uncertain, time-varying channels. CRASP Workshop, Ft. Meade, MD, May, 1996.
31. D.H. Johnson. Science, Scholarship, and Communication via the Internet. ARO MidWinter Meeting, 4–8 February 1996.
32. D.H. Johnson. Single neuron modeling constrained by point process measurements. *CNS '94*, Monterey, CA, 20–22 July 1994.
33. D.H. Johnson. Single neuron modeling constrained by point process measurements. *Gordon Research Conference on Theoretical Biology and Biomathematics*, Tilton, NH, 12–17 June 1994.
34. D.H. Johnson. Is It Chaotic or Random? Invited lecture, Houston Section of the IEEE, April 28, 1994.
35. D.H. Johnson. Binaural Hearing: How Should It Work and How Does It Work? Invited lecture, Houston Section of the Acoustical Society of America, December 10, 1992.
36. D.H. Johnson. Single neuron modeling constrained by spike train measurements. Neuroscience Department, Baylor College of Medicine, Houston, TX. April 24, 1992.
37. D.H. Johnson. Function-based modeling of spatial localization. Invited lecture, Duke University Medical School, May 4, 1990.
38. D.H. Johnson. Point process models in the auditory system. Invited lecture, Department of Electrical Engineering, U. Michigan. October, 1989.
39. D.H. Johnson. Trends in array signal processing. Plenary presentation, *Multidimensional Signal Processing Workshop*. September, 1989.

40. M.T. Heideman, D.H. Johnson, and C.S. Burrus. Gauss and the early history of the FFT. Invited paper presented at the Third Army Conf. on Applied Mathematics, May 1985.
41. M.T. Heideman, D.H. Johnson, and C.S. Burrus. Gauss and the early history of the FFT. Plenary presentation at the Digital Signal Processing Workshop, Chatham, MA, Oct 1984.
42. D.H. Johnson. On the applicability of nonlinear system theory to the modeling of responses of the peripheral auditory system to complex stimuli. Invited presentation at the Fiftieth Anniversary Meeting of the Acoustical Society of America, 1979.

Books and Book Chapters

1. D.H. Johnson. Principles of neural signal processing. Chapter in *Biohybrid Systems* edited by Ranu Jung. Wiley.
2. D.H. Johnson. Information-theoretic analysis of neural data. Chapter 3 in *Statistical Signal Processing for Neuroscience and Neurotechnology* edited by Karim Oweiss, 69–92. Elsevier, 2010.
3. D.H. Johnson, C.J. Rozell, and I.N. Goodman. Information theory and systems neuroscience. Chapter in *Analysis of Parallel Spike Trains* edited by Sonja Grün. Springer, 2010.
4. D.H. Johnson. *The Oslo Person: The Biography of Hans Ferdinand Mayer*, in preparation.
5. D.H. Johnson. *Fundamentals of Electrical Engineering I*, The Connexions Project, QOOP Publishing, 2005.
6. D.H. Johnson and D.E. Dudgeon. *Array Signal Processing: Concepts and Techniques*, Prentice-Hall, 1993.
7. C. Tsuchitani and D.H. Johnson. Binaural cues and signal processing in the superior olivary complex. In *Neurobiology of Hearing, Vol. III: The Central Auditory System*. Ed. by R. Altschuler, D. Hoffman, D. Bobbin, and B. Clopton. Raven Press, New York, pp. 163–193, 1991.
8. C. Tsuchitani and D.H. Johnson. Statistical modeling of auditory neuron discharges. In J.S. Lund, editor, *Sensory Processing in the Mammalian Brain*, pp. 147–171, Oxford University Press, 1989.
9. D.H. Johnson and S.R. DeGraaf. Properties of high-resolution bearing estimation algorithms. In *High-Resolution Spatial Processing in Underwater Acoustics*, ed. by R.A. Wagstaff and A.B. Baggeroer, (NORDA, NSTL, MS), pp. 45–60, 1985.
10. S.R. DeGraaf and D.H. Johnson. Capability of array processing algorithms to resolve source bearings. In *Statistical Signal Processing*, ed. by E. Wegman and J. Smith, (Marcel-Dekker, Inc., New York), pp. 329–339, 1984.

Reviewed Journal Publications

1. E. Hendriks, C.R. Johnson, Jr., D.H. Johnson. Interpreting canvas weave matches. Submitted to *Art Matters*, May, 2010.
2. D.H. Johnson. Information theory and neural information processing. *IEEE Trans. Information Theory*, 56: 653–666, 2010.
3. C.J. Rozell, D.H. Johnson, R.G. Baraniuk and B.A. Olshausen. Neurally plausible sparse coding via thresholding and local competition. *Neural Computation*, 20: 2526–2563, 2008.
4. L. Gao, W. Gardner, C. Robbins, M. Memarzadeh, D. Johnson. Limits on data communication along the drill string using acoustic waves. *SPE Reservoir Evaluation & Engineering*, 11: 141–146, 2008.
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Reviewed Conference Papers

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2. D.H. Johnson, C.R. Johnson, Jr. and E. Hendriks. Signal processing and analyzing works of art. Invited talk, *SPIE Optics and Photonics*, 7798–15, San Diego, August 2010.
3. D.H. Johnson, C.R. Johnson, Jr. and E. Hendriks. Comparative analysis of the canvas weaves of Vincent van Gogh's paintings. IP4AI3, Museum of Modern Art, New York, May 2010.
4. D.H. Johnson, E. Hendriks, M. Geldof, C.R. Johnson, Jr. Do weave matches imply canvas roll matches? AIC Conference, Milwaukee, May 2010.
5. D.H. Johnson, C.R. Johnson, Jr. and E. Hendriks. Signal Processing and Analyzing Works of Art. Invited talk, *Sparsity and Modern Mathematical Methods for High Dimensional Data*, Brussels, Belgium, April 2010.
6. D.H. Johnson, L. Sun, C.R. Johnson, Jr. and E. Hendriks. Matching canvas weave patterns from processing x-ray images of master paintings. Poster VMSP-P2.8, *ICASSP*, Dallas, Texas, March 2010.
7. E.L. Dyer, D.H. Johnson and R.G. Baraniuk. Sparse coding in modular networks. *COSYNE*, Feb. 2010.
8. E. Hendriks, C.R. Johnson, Jr. and D.H. Johnson. Automated thread counting from x-rays of canvas picture supports. Workshop on Conservation documentation: on-going projects and perspectives. ICOM-CC Working Group: Paintings, London, September 2009.
9. E. Hendriks, L. Jansen, E. Ravaud, J. Salvant, M. Eveno, M. Menu, I. Fiedler, M. Geldof, L. Megens, M. van Bommel, C.R. Johnson, Jr. and D.H. Johnson. A comparative study of Vincent van Gogh's *Bedroom* series. National Gallery Technical Bulletin Symposium, London, September 2009.
10. E.L. Dyer, D.H. Johnson and R.G. Baraniuk. Sparse coding with population sketches. *CNS*2009*, Berlin, July 2009.
11. D.H. Johnson, C.R. Johnson, Jr., E. Hendriks. Computer analysis of the canvas weaves of Vincent van Gogh's paintings. EU-Artech Symposium *van Gogh and Contemporaries*, van Gogh Museum, Amsterdam, May 2009.
12. D.H. Johnson, C.R. Johnson, Jr., A.G. Klein, W.A. Sethares, H. Lee and E. Hendriks. A thread counting algorithm for art forensics. *DSP Workshop*, Marco Island, Florida, January 2009.
13. A.G. Klein, D.H. Johnson, W.A. Sethares, H. Lee, C.R. Johnson, Jr. and E. Hendriks. Algorithms for old master painting canvas thread counting from x-rays, *Proc. Asilomar Conf. on Signals, Systems, and Computers*, October 2008.
14. I.N. Goodman and D.H. Johnson. Spike sorting should be biased for optimal neural control prostheses. *CNS 2008 Meeting*, Portland, Oregon, July 2008.
15. D.H. Johnson. Information theory and neuroscience: Why is the intersection so small? Invited talk, Information Theory Workshop, Porto, Portugal, May 2008.
16. R.L. Ortman, C.J. Rozell and D.H. Johnson. Reconstruction of compressively sensed images via neurally plausible local competitive algorithms. *CISS*, Princeton, New Jersey, March 2008.
17. I.N. Goodman and D.H. Johnson. Information theoretic bounds on neural prosthesis effectiveness: The importance of spike sorting. *ICASSP 2008*, Las Vegas, Nevada, April 2008.
18. C.J. Rozell, D.H. Johnson, R.G. Baraniuk and B.A. Olshausen. Neural architectures for sparse approximation. *Information Theory and Applications Workshop*, San Diego, January 2008.
19. C.J. Rozell, D.H. Johnson, R.G. Baraniuk, B.A. Olshausen. Locally competitive algorithms for sparse approximation. *ICIP 2007*, San Antonio, Texas, September 2007.
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21. M.A. Sheikh and D.H. Johnson. Fundamental detection and estimation limits in spike sorting. *ICASSP 2007*, Honolulu, Hawaii, April 2007.
22. C.J. Rozell and D.H. Johnson. Power scheduling for wireless sensor and actuator networks. *ISPN'07*, April 2007.

23. M.A. Lexa and D.H. Johnson. Global optimization of distributed broadcast quantization systems for classification. DCC'07, Snowbird, Utah, March 2007.
24. C.J. Rozell, D.H. Johnson, R.G. Baraniuk and B.A. Oldshausen. Neurally plausible sparse coding via competitive algorithms *Computational and Systems Neuroscience (Cosyne)*, February 2007.
25. D.H. Johnson and I.N. Goodman. Capacity of populations: Implications for Neural Prosthetics. *Computational and Systems Neuroscience (Cosyne)*, February 2007.
26. 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. *Annual Meeting of the IEEE Lasers and Electro-Optics Society (IEEE LEOS)*, Montreal, 2006.
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33. L. Gao *et al.* Acoustic telemetry can deliver more real-time downhole data in under-balanced drilling operations. *IADC/SPE Drilling Conference*, Miami, Florida, February, 2006.
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36. C.J. Rozell and D.H. Johnson. Analysis of noise reduction in redundant expansions under distributed processing requirements. *ICASSP*, Philadelphia, PA, March 2005.
37. C.C. Lane and D.H. Johnson. A computational approach to hearing aid design: Minimization of distortion in impaired auditory nerve fiber responses in a variety of acoustic environments *Midwinter Meeting ARO*, New Orleans, LA, Feb. 2005.
38. V.V. Shah, W.R. Gardner, D.H. Johnson, S. Sinanović. Design considerations for a new high data rate LWD acoustic telemetry system. *Asia Pacific Oil & Gas Conference*, Society for Petroleum Engineers, Perth, Australia, 2004.
39. D.H. Johnson and J. Uppuluri. Finding likely models that describe joint statistics. *DSP Workshop*, Taos, New Mexico, August 2004.
40. D.H. Johnson and J. Uppuluri. Finding likely models that describe population responses. *Computational Neuroscience '04*, Baltimore, Maryland, July 2004.
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50. M.A. Lexa and D.H. Johnson. A new look at the informational gains of soft decisions. *ICASSP*, Hong Kong, April 2003.
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62. D.H. Johnson and S. Sinanović. A framework for a theory of information processing. *Ninth DSP Workshop*, Hunt, Texas, October, 2000.
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64. C.M. Gruner and D.H. Johnson. Fundamental limits on spike sorting. *Computational Neuroscience '00*, Brugge, Belgium, July, 2000.

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