

Don Herrick Johnson

J.S. Abercrombie Professor Emeritus
 Department of Electrical & Computer Engineering
 Rice University, MS 366
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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 2011-present Adjunct Research Fellow, Van Gogh Museum
 2008-present J.S. Abercrombie Professor Emeritus, Department of Electrical & Computer Engineering, Rice University
 2005 Visiting Professor, International University, Bremen (Sabbatical)
 2000-08 J.S. Abercrombie Professor, Department of Electrical & Computer Engineering, Rice University
 1985-2014 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

| | | | |
|-------------------------------|---|------------------------------|-----------|
| NSF-IIS-1124535 | DIP: Collaborative Research: A Personalized Cyber-learning System Based on Cognitive Science | September, 2011 48 months | \$570,150 |
| NSF-OCI-1041396 | Collaborative Research: CI-Team Implementation Project: The Signal Processing Education Network | October, 2010 36 months | \$481,250 |
| NSF-CCF-1048344 | Counting Van Gogh and Vermeer | January, 2011 24 months | \$20,790 |
| 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 |

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|------------------------------------|---|---------------------------|-------------|
| 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 |
| 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 (developed) |
| ELEC 535 | Information Theory (developed) |
| ELEC 632 | Speech Signal Processing (developed) |
| ELEC 697 | Array Signal Processing (developed) |
| ENGI 202 | Information Science and Technology (developed) |

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 Memarzadeh. *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. Ciscun. *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

| | | |
|---------------------|-----------|---|
| 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 |
| Nirmal Warke | 1996–97 | Type-based signal processing |
| Miriam Zacksenhouse | 1993–94 | Computational modeling of LSO and auditory-nerve fiber discharge patterns |

Undergraduate Research

| | | |
|----------------------|-----------|---|
| Tan Nyguen | 2012 | Spectral Thread Count Analysis in Highly Variable Weave and Thread-Width Conditions |
| Stephen Crowe | 2009 | Canvas Thread Count Analysis for Master Paintings |
| 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*

| | |
|-----------------------|--|
| 2012–2013 | Member, Faculty Senate Working Group on Online Teaching |
| 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 |

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|----------|--|
| 1990–94 | Member, ECE Department Undergraduate Committee |
| 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

| | |
|---------|---|
| 2012–14 | Coursera Instructor |
| 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

| | |
|--------------|---|
| 2010–12 | IEEE History Committee; Treasurer, 2012 |
| 2008–10 | Chair, Computational Neuroscience Meeting Program Committee |
| 2007–10 | 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: <i>Applied Signal Processing</i> |
| 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, <i>IEEE Transactions on Signal Processing</i> |
| 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, <i>Symposium on Basic Research in a Clinical Environment</i> . Held July 5–7, 1989 |

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1989–90 Chair, Fourth Digital Signal Processing Workshop Committee. Held September, 1990
 1986, 1988 Program Co-Chair, Digital Signal Processing Workshop

Online Courses

| | | |
|------------|--|----------|
| 2013, 2014 | <i>Fundamentals of Electrical Engineering</i> | Coursera |
| 2014 | <i>Fundamentals of Electrical Engineering Laboratory</i> | Coursera |

Short Courses

| | | |
|------|--|---|
| 2018 | <i>Installation and Use of Automatic Thread Counting Software</i> | Workshop at the University of Oslo, Oslo Norway |
| | <i>Installation and Use of Automatic Thread Counting Software</i> | Workshop at the University of Amsterdam, Amsterdam, The Netherlands |
| 2018 | <i>Installation and Use of Automatic Thread Counting Software</i> | AIC Workshop, Houston, Texas |
| | <i>Installation and Use of Automatic Thread Counting Software</i> | Workshop at the National Gallery of Art, Washington, D.C. |
| 2009 | <i>Automatic Thread Counting</i> (with C.R. Johnson, Jr. and E. Hendriks) | Courtauld Institute of Art |
| 1993 | <i>Array Signal Processing</i> (with D.E. Dudgeon) | ICASSP '93 Tutorial |
| 1988 | <i>Engineering Workstations</i> (with M. Pearlman) | 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 8,199,244 | June 12, 2012 | 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 8,193,946 | June 5, 2012 | S. Sinanović, D.H. Johnson, W.R. Gardner, L. Gao, C.A. Robbins Training for directional detection |
| U.S. Patent 8,045,152 | Oct. 25, 2011 | N.J. Halas, D.H. Johnson, S.W. Bishnoi, C.S. Levin, C.J. Rozell, B.R. Johnson All optical nanoscale sensor |
| 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. Ciscón, 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. Ciscón, 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. Magritte's Use of Canvas. *Beyond the Image, Beneath the Paint*, Menil Symposium, Houston, Texas, March 2014.
2. D.H. Johnson. More than thread counts matter. Invited talk, *TCAP Experts Meeting*, Rijksmuseum, June 2013.
3. D.H. Johnson, C.R. Johnson, Jr. and E. Hendriks. Weave spectral analysis for thread counting and weave matching. Invited talk, *E-humanities: visual arts meets science*, NIAS, Wassenaar, June 2011. Invited talk, *SPIE Optics and Photonics*, 7798–15, San Diego, August 2010.
4. 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.
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. Information theory and neuroscience. Invited talk, ECE Department, University of Illinois, April 2, 2009.
7. 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.
8. 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.
9. D.H. Johnson. Information theory and neuroscience: Why is the intersection so small? Invited talk, Information Theory Workshop, Porto, Portugal, May 2008.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.

16. D.H. Johnson. Limits of Neural Population Coding. Invited talk, Department of Biomedical Engineering, University of Houston, December 5, 2003.
17. D.H. Johnson. From Signal to Information Processing. Invited Talk, Harvard University, March 7, 2003.
18. D.H. Johnson. From Signal to Information Processing. Invited talk, Statistics Department, Rice University, February 17, 2003.
19. Information processing performance limits of neural populations. Invited presentation. *Neural Coding Workshop*, Mathematical Biosciences Institute, Columbus, Ohio, February 10–14, 2003.
20. D.H. Johnson and W. Ray. Optimal stimulus coding by populations. Featured contributed talk at *Computational Neuroscience '01*, Asilomar, CA, July 1–6, 2001.
21. 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.
22. D.H. Johnson. Information theory and neural coding. The David Bodian Seminar in Neuroscience, Johns Hopkins University, March 12, 2001.
23. D.H. Johnson A theory of information processing. IMA Workshop on Multimedia Processing. Minneapolis, MN, January, 2001.
24. D.H. Johnson. DSP in Rice University's Electrical and Computer Engineering curriculum (invited paper). *First Signal Processing Education Workshop*, Hunt, Texas, October, 2000.
25. D.H. Johnson. Information-theoretic analysis of neural recordings. Invited talk, Univ. Michigan, May 9, 2000.
26. D.H. Johnson. From signal processing to information processing. Invited talk, Electrical Engineering Dept., University of Illinois at Chicago, May 8, 2000.
27. D.H. Johnson. From signal processing to information processing. Signal Processing Society Distinguished Lecture, Philadelphia Chapter, April 18, 2000.
28. 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.
29. 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.
30. D.H. Johnson. Signal encoding in discharge patterns of the auditory system. IMA Workshop on Audition, University of Minnesota, Minneapolis, MN, March, 1999.
31. 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.
32. D.H. Johnson, S. Yang, and J.L. Pistole. Adaptive reception for uncertain, time-varying channels. CRASP Workshop, Ft. Meade, MD, May, 1996.
33. D.H. Johnson. Science, Scholarship, and Communication via the Internet. ARO MidWinter Meeting, 4–8 February 1996.
34. D.H. Johnson. Single neuron modeling constrained by point process measurements. *CNS '94*, Monterey, CA, 20–22 July 1994.
35. 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.
36. D.H. Johnson. Is It Chaotic or Random? Invited lecture, Houston Section of the IEEE, April 28, 1994.
37. 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.
38. D.H. Johnson. Single neuron modeling constrained by spike train measurements. Neuroscience Department, Baylor College of Medicine, Houston, TX. April 24, 1992.

39. D.H. Johnson. Function-based modeling of spatial localization. Invited lecture, Duke University Medical School, May 4, 1990.
40. D.H. Johnson. Point process models in the auditory system. Invited lecture, Department of Electrical Engineering, U. Michigan. October, 1989.
41. D.H. Johnson. Trends in array signal processing. Plenary presentation, *Multidimensional Signal Processing Workshop*. September, 1989.
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Books and Book Chapters

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2. E. Hendriks et al. Painting methods and materials in the Amsterdam *Sunflowers*. Chapter 4 in *Van Gogh's Sunflowers Illuminated: Art Meets Science*, 85–123. Van Gogh Museum Studies I, Amsterdam University Press, 2019.
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7. R. Erdmann, D.H. Johnson, K. Muir. Monet's supports: Thread count, weave and ground analysis of Monet's paintings in the Art Institute of Chicago. Chapter in *Peindre au temps des impressionnistes : l'apport de l'étude matérielle des toiles*, Bénédicte Trémolières, editor. Presses Universitaires De Rouen Et Du Havre, 2016.
8. D.H. Johnson and C. Berry. Canvas-Weave Analysis. Appendix 2 in *The Brothers Le Nain: Painters of Seventeenth-Century France*, C.D. Dickerson III and E. Bell. Fine Arts Museums of San Francisco and Yale University Press, 2016.
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2. A. Roy and E. Hendriks. Van Gogh's *Sunflowers* in London and Amsterdam. *National Gallery Technical Bulletin*, 37: 54–71, 2016.
3. S. Scully and C. Seidel. A tüchlein by Jutus van Ghent: The Adoration of the Magi in the Metropolitan Museum of Art re-examined. *J. Historians of Netherlandish Art*, 8, 2015. <http://jhna.org/index.php/vol-8-1-2016/323-seidel-scully>.
4. C.R. Johnson, Jr., D.H. Johnson, I. Verslype, R. Lugtigheid, R.G. Erdmann. Detecting weft snakes. *Art Matters*, 5: 48–52, 2013. <http://www.artmattersjournal.org/>.
5. D.H. Johnson, E. Hendriks, C.R. Johnson, Jr. Interpreting canvas weave matches. *Art Matters* (<http://www.artmattersjournal.org/>), 5: 53–61, 2013.
6. D.H. Johnson, C.R. Johnson, Jr., R.G. Erdmann. Weave analysis of paintings on canvas from radiographs. *Signal Processing*, 93: 527–540, 2013.

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Reviewed Conference Papers

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2. R. Malladi, D.H. Johnson, G. Kalamangalam, N. Tandon, B. Aazhang. Data-driven estimation of mutual information using frequency domain and its application to epilepsy. *Asilomar 2017*, Asilomar, CA, October 2017.
3. R. Malladi, D.H. Johnson, G. Kalamangalam, N. Tandon, B. Aazhang. Measuring cross-frequency coupling using mutual information and its application to epilepsy. *CoSyne 2017*, Salt Lake City, Utah, February 2017.
4. D.H. Johnson. Quantifying artist canvas with digital signal processing tools. *Digital Frontiers 2016*, Houston, Texas, September 2016.
5. K. Muir, I. Fiedler, D.H. Johnson, R.G. Erdmann. An in-depth study of the materials and technique of paintings by Claude Monet from the Art Institute of Chicago. *ICOM-CC 17th Triennial Conference Preprints*, art. 1308, ed. J. Bridgland, Melbourne, Australia, September 2014.
6. K. Muir, I. Fiedler, D.H. Johnson, R.G. Erdmann. Thread count, weave, and ground analysis of Claude Monet’s Vieille & Troisgros/Troisgros Frères canvases in the Art Institute of Chicago. *Fifth International Symposium on Painting Techniques*, Rijksmuseum, Amsterdam, September 2013.
7. D.H. Johnson. Teaching a “MOOC:” Experiences from the front line. *DSP & SPE Workshop*, Santa Clara, CA, August 2013.
8. D.H. Johnson. Finding matching canvas supports. *van Gogh’s Studio Practice in Context*, Van Gogh Museum, Amsterdam, June 2013.
9. D.H. Johnson, P. Prandoni, P.C. Pinto, M. Vetterli. Teaching signal processing online: A report from the trenches. *ICASSP*, Vancouver, May 2013.
10. D.H. Johnson. Thread count analysis of Jordaens’ paintings on canvas. *Jacob Jordaens: Werkgenese, Veränderung, Restaurierung*, Museumslandschaft Hessen Kassel, May 6–7, 2013.
11. R. Erdmann, D.H. Johnson, K. Muir. Monet’s supports: Thread count, weave and ground analysis of Monet’s paintings in the Art Institute of Chicago. *Face, revers et leurs interactions en peinture (1870–1900)*, Journée d’études internationales, Rouen, France, December 2012.

12. P. Noble, A. van Loon, C.R. Johnson, Jr. and D.H. Johnson. The study and treatment of Rembrandt and/or studio of *Saul and David*, c. 1660 from the collection of the Mauritshuis. *Paintings Working Group, ICOM-CC 16th Triennial Conference*, Lisbon, Portugal, September 2011.
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14. 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. *Studying Old Master Paintings: Technology and Practice*, Marika Spring, editor, Archetype Publishers, London: 237–243, 2011.
15. E.L. Dyer, M.F. Duarte, D.H. Johnson and R.G. Baraniuk. Recovering spikes from noisy neuronal calcium signals via structured sparse approximation. *LVA/ICA 2010*, St. Malo, France, September 2010.
16. 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.
17. D.H. Johnson, E. Hendriks, M. Geldof, C.R. Johnson, Jr. Do weave matches imply canvas roll matches? *AIC Conference*, Milwaukee, May 2010.
18. 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.
19. D.H. Johnson, L. Sun, C.R. Johnson, Jr. and E. Hendriks. Matching canvas weave patterns from processing x-ray images of master paintings. *ICASSP Proceedings*, Dallas, Texas: 958–961, March 2010.
20. E.L. Dyer, D.H. Johnson and R.G. Baraniuk. Sparse coding in modular networks. *COSYNE*, Feb. 2010.
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22. E.L. Dyer, D.H. Johnson and R.G. Baraniuk. Sparse coding with population sketches. *CNS*2009*, Berlin, July 2009.
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26. I.N. Goodman and D.H. Johnson. Spike sorting should be biased for optimal neural control prostheses. *CNS 2008 Meeting*, Portland, Oregon, July 2008.
27. D.H. Johnson. Information theory and neuroscience: Why is the intersection so small? Invited talk, *Information Theory Workshop*, Porto, Portugal, May 2008.
28. 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.
29. 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.
30. 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.

31. C.J. Rozell, D.H. Johnson, R.G. Baraniuk, B.A. Oldshausen. Locally competitive algorithms for sparse approximation. *ICIP 2007*, San Antonio, Texas, September 2007, IV: 169–172.
32. I.N. Goodman and D.H. Johnson. Information theoretic bounds on the effectiveness of neural prosthetics. *CNS 2007 Meeting*, Toronto, July 2007.
33. M.A. Sheikh and D.H. Johnson. Fundamental detection and estimation limits in spike sorting. *ICASSP 2007*, Honolulu, Hawaii, April 2007.
34. C.J. Rozell and D.H. Johnson. Power scheduling for wireless sensor and actuator networks. *ISPN'07*, April 2007.
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