

CURRICULUM VITA :: C. RICHARD JOHNSON, JR. :: SEPTEMBER 2024

DEGREES

- 1977 :: Ph.D.E.E. (Electrical Engineering) with minors in Engineering-Economic Systems and Art History, Stanford University, Stanford, CA.
- 1975 :: M.S.E.E., Stanford University, Stanford, CA.
- 1973 :: B.E.E. with high honors, Georgia Institute of Technology, Atlanta, GA.

ACADEMIC/RESEARCH APPOINTMENTS

- 2021 - present :: Geoffrey S. M. Hedrick Senior Professor of Engineering Emeritus, Cornell University, Ithaca, NY
- 2019 - 23 :: Senior Research Advisor, Frick Art Reference Library, New York, NY
- 2017 - 22 :: Visiting Research Professor, Conservation Center of the Institute of Fine Arts, New York University, New York, NY
- 2016 - 18 :: Jacobs Fellow in Computational Arts and Humanities, Jacobs Technion-Cornell Institute, Cornell Tech, New York, NY
- 2013 - 21 :: Scientific Researcher, Rijksmuseum, Amsterdam, the Netherlands
- 2008 - 21 :: Geoffrey S. M. Hedrick Senior Professor of Engineering, Cornell University, Ithaca, NY
- 2007 - 11 :: Adjunct Research Fellow, Van Gogh Museum, Amsterdam, the Netherlands
- 1987 - 2021 :: Professor, Electrical and Computer Engineering, Cornell University, Ithaca, NY
- 1981 - 87 :: Associate Professor, Electrical Engineering, Cornell University, Ithaca, NY
- 1977 - 81 :: Assistant Professor, Electrical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA

PROFESSIONAL HONORS

- 2017 - 2018 :: Selected RKD Visiting Fellow in Computational Art History, RKD - Netherlands Institute for Art History, the Hague, the Netherlands
- 2005 :: Selected a Fulbright Research Scholar to Conservatoire National des Arts et Métiers (Paris, France) on “adaptive signal processing algorithms and communication systems applications”
- 2004 :: Designated a Stephen H. Weiss Presidential Fellow of Cornell University “for effective, inspiring, and distinguished teaching of undergraduate students and for outstanding contributions to undergraduate education”
- 1991 :: Selected a Distinguished Lecturer of the Signal Processing Society of the Institute of Electrical and Electronics Engineers (IEEE)
- 1989 :: Elected a Fellow of the IEEE “for contributions to adaptive parameter estimation theory with applications in digital control and signal processing”.
- 1983 :: Selected the (Eta Kappa Nu) C. Holmes MacDonald Outstanding (Young Electrical Engineering) Teacher [national award]
- 1982 :: Selected the Eta Kappa Nu Outstanding Young Electrical Engineer [national award] for “his outstanding contributions to the field of control technology, his cultural achievements, and his involvement in professional activities”
- 1982 :: Received a Senior (Best Paper) Award from the IEEE Acoustics, Speech, and Signal Processing Society for “SHARF Convergence Properties” (appearing June 1981 in the *IEEE Transactions on Acoustics, Speech, and Signal Processing* and co-authored with M. G. Larimore, J. R. Treichler, and B. D. O. Anderson)

PRIMARY RESEARCH INTERESTS

1977-1991: Adaptive Feedback Systems Theory; 1991-2005: Blind Equalization in Digital Communication Receivers; 2005-present: Signal Processing in Computational Art History

RECENT FUNDING

- National Endowment for the Humanities Digital Humanities Advancement Grant HAA-256123-17, “Building a Decision Tree for Watermark Identification in Rembrandt’s Etchings–The WIRE Project,” October 2017-March 2020.
- National Science Foundation Early-concept Grants for Exploratory Research (EAGER) Grant CCF-1822007, “Automated Watermark and Moldmate Identification,” March 2018-February 2020.
- Getty Foundation Digital Art History Initiative Grant ORG-201943572, “Applying Digital Image Processing Algorithms to the Study of Prints and Drawings,” May 2019-September 2021.
- Getty Foundation Digital Art History Initiative Grant ORG-202151465, “Computational Characterization of Historic Papers via Watermarks, Chain Lines, and Laid Lines,” June 2021-June 2023.

RECENT RESEARCH TALKS

- [“Breaking New Ground: Computational Tools for Art Scholarship,”](#) Signal Processing and Art Conservation Lecture, Lunder Conservation Center of the Smithsonian American Art Museum, July 20, 2017.
- [“Using Computed Weave Maps to Gain Art-Historical Insight from Vermeer’s Canvases,”](#) Digital Art History Lab Lecture, Frick Collection, May 2, 2017.
- [“The Watermark Identification in Rembrandt’s Etchings \(WIRE\) Project at Cornell,”](#) Digital Art History Lab Lecture, Frick Collection, December 6, 2018.
- [“Hunting for Paper Moldmates in Leonardo da Vinci’s Codices,”](#) Digital Art History Lab Lecture, Frick Collection, February 18, 2021.
- [“An Introduction to Mostly Automated Watermark Identification,”](#) Rembrandt im Spiegel neuer technologische Untersuchungen, Städel Museum, January 22, 2022.
- [“Rembrandt Meets the Watermark Imaging System,”](#) Getty Scholar Talk, Getty Research Institute, February 13, 2023.
- [“Watermark Match Discoveries in Drawings by Rembrandt,”](#) Digital Art History Talk, Frick Collection, May 17, 2023.

SELECTED BOOKS AND BOOK CHAPTERS

- X. Y. Han, V. Papyan, E. Prokop, D. L. Donoho, and C. R. Johnson, Jr., [“Artificial Intelligence and Discovering the Digital Photoarchive”](#) in *Archives, Access and Artificial Intelligence: Working with Born-Digital and Digitized Archival Connections*, L. Jaillant, ed., pp. 29-60, Bielefeld University Press, 2022.
- C. R. Johnson, Jr., [“Exploiting Weave Maps”](#) in *Counting Vermeer: Using Weave Maps to Study Vermeer’s Canvases*, C. R. Johnson, Jr. and W. A. Sethares, eds., RKD Studies, chapter 6, 2017.
- A. C. Weislogel and C. R. Johnson, Jr., [“Decision Trees and Fruitful Collaborations: The Watermark Identification in Rembrandt’s Etchings \(WIRE\) Project at Cornell”](#) in *Lines of Inquiry: Learning from Rembrandt’s Etchings*, pp. 32-57, Herbert F. Johnson Museum of Art, Cornell University, 2017.
- C. R. Johnson, Jr., W. A. Sethares, M. H. Ellis, S. Haqqi, R. Snyder, E. Hinterding, I. van Leeuwen, A. Wallert, D. Christoforou, J. van der Lubbe, N. Orenstein, A. Campbell, and G. Dietz, [“Chain Line Pattern Matching in Rembrandt’s Prints”](#) in *Rembrandt and His Circle: Insights and Discoveries*, S. Dickey, ed., pp. 319-334, Amsterdam University Press, 2017.

- E. Hendriks, C. R. Johnson, Jr., D. H. Johnson, and M. Geldof, “Automated Thread Counting and the Studio Practice Project” in *Van Gogh’s Studio Practice*, ed. by M. Vellekoop, M. Geldof, E. Hendriks, L. Jansen, and A. de Tagle, pp. 156-181, Mercatorfonds, 2013.
- C. R. Johnson, Jr., W. A. Sethares, and A. G. Klein, *Software Receiver Design: Build Your Own Digital Communication System in Five Easy Steps*, Cambridge University Press, 2011
- J. R. Treichler, C. R. Johnson, Jr., and M. G. Larimore, *Theory and Design of Adaptive Filters*, Prentice-Hall 2001
- R. A. Casas, T. J. Endres, A. Touzni, C. R. Johnson, Jr., and J. R. Treichler, “Current Approaches to Blind Decision Feedback Equalization” in *Signal Processing Advances in Communications, Vol. 1: Trends in Channel Estimation and Equalization*, G. Giannakis, Y. Hua, P. Stoica, and L. Tong, eds., pp. 367-415, Prentice Hall, 2001.
- C. R. Johnson, Jr., P. Schniter, I. Fijalkow, L. Tong, J. D. Behm, M. G. Larimore, D. R. Brown, R. A. Casas, T. J. Endres, S. Lambbotharan, A. Touzni, H. H. Zeng, M. Green, and J. R. Treichler, “[The Core of FSE-CMA Behavior Theory](#)” in *Unsupervised Adaptive Filtering, vol. II: Blind Deconvolution*, Simon Haykin, ed., pp. 13-112, Wiley, 2000.
- C. R. Johnson, Jr., *Lectures on Adaptive Parameter Estimation*, Prentice Hall, 1988.
- B. D. O. Anderson, R. R. Bitmead, C. R. Johnson, Jr., P. V. Kokotovic, R. L. Kosut, I. M. Y. Mareels, L. Praly, and B. D. Riedle, *Stability of Adaptive Systems: Passivity and Averaging Analysis*, MIT Press, 1986.
- B. G. Buchanan, T. M. Mitchell, R. G. Smith, and C. R. Johnson, Jr. “[Models of Learning Systems](#)” in *Encyclopedia of Computer Science and Technology*, vol. 11, pp. 24-51. Marcel Dekker, 1978.

SELECTED JOURNAL PUBLICATIONS IN COMPUTATIONAL ART HISTORY

- M. H. Ellis, C. R. Johnson, Jr., and W. A. Sethares, “[Moldmates Matter: Computational Tools to Enhance, Measure, Compare, and Match Historical Papers](#),” *Getty Research Journal*, no. 17, pp. 1-24, February 2023.
- A. Campbell, C. R. Johnson, Jr., and W. A. Sethares, “[From Rags to Riches: Pursuing the Connections between Albrecht Durer’s Linen Papers and the Fugger Family’s Mercantile Trademark](#),” *The Quarterly: The Journal of the British Association of Paper Historians*, no. 124, pp. 1-10, October 2022.
- A. Slawik, M. H. Ellis, W. A. Sethares, and C. R. Johnson, Jr., “[User-friendly Software for Identifying Moldmates and Twins in Antique Laid Paper: Case Study of a Disbound Blank Book](#),” *Manuscript Studies: A Journal of the Schoenberg Institute for Manuscript Studies*, issue 7.2, 2022.
- C. R. Johnson, Jr., W. A. Sethares, and M. H. Ellis, “[Overlay Videos for Quick and Accurate Watermark Identification, Comparison, and Matching](#),” *Journal of Historians of Netherlandish Art*, vol. 13.2, 2021.
- M. H. Ellis, W. A. Sethares, and C. R. Johnson, Jr., “[A Powerful Tool for Paper Studies: The Computational Coding of Watermarked Papers in Leonardo’s Codex Leicester and Codex Arundel](#),” *The Quarterly: The Journal of the British Association of Paper Historians*, no. 119, pp. 1-18, July 2021.
- E. Prokop, X. Y. Han, V. Papyan, D. L. Donoho, and C. R. Johnson, Jr., “[AI and the Digitized Photoarchive: Promoting Access and Discoverability](#),” *Art Documentation*, vol. 40, pp.1-20, Spring 2021.
- S. F. Gorske, C. R. Johnson, Jr., W. A. Sethares, M. H. Ellis, and P. Messier, “[Moldmate Identification in 16th-century European Paper Using Quantitative Analysis of Watermarks, Chain Line Intervals, and Laid Line Density](#),” *International Journal for Digital Art History*, 5:6.14-6.35, March 2021.
- C. R. Johnson, Jr., “[Decision Trees for Watermark Identification in Rembrandt’s Etchings](#),” *Journal of Historians of Netherlandish Art*, vol. 12.2, 2020.

- W. A. Sethares, M. H. Ellis, and C. R. Johnson, Jr., “[Computational Watermark Enhancement in Leonardo’s *Codex Leicester*](#),” *Journal of American Institute of Conservation*, vol. 59, issue 2, pp. 87-96, March 2020.
- M. H. Ellis and C. R. Johnson, Jr., “[Computational Connoisseurship: Enhanced Examination Using Automated Image Analysis](#),” *Visual Resources* (Special Issue on Digital Art History), vol. 35, no. 1-2, pp. 125-140, March-June 2019.
- C. R. Johnson, Jr. and W. A. Sethares, “[Hunting for Weave Matches: Computation in Art Scholarship](#),” *The Journal of Interactive Technology and Pedagogy* (Special Issue on Re-viewing Digital Technologies and Art History), Issue 12, February 2018.
- C. R. Johnson, Jr. and W. A. Sethares, “[Canvas Weave Match Supports Designation of Vermeer’s *Geographer* and *Astronomer* as a Pendant Pair](#),” footnoteurl: <https://doi.org/10.5092/jhna.2017.9.1.17> *Journal of Historians of Netherlandish Art* (Special issue for Walter Liedtke), vol. 9, issue 1, Winter 2017.
- C. R. Johnson, Jr., W. A. Sethares, M. H. Ellis, and S. Haqqi, “[Hunting for Paper Moldmates Among Rembrandt’s Prints](#),” *IEEE Signal Processing Magazine* (Special Section - Signal Processing for Art Investigation), vol. 32, pp. 28-37, July 2015.
- P. Doing and C. R. Johnson, Jr., “[On Applying Signal Processing to Computational Art History: An Interview](#),” *International Journal for Digital Art History*, issue 1, pp. 64-75, 2015.
- C. R. Johnson, Jr., P. Messier, W. A. Sethares, A. G. Klein, C. Brown, A. H. Do, P. Klausmeyer, P. Abry, S. Jaffard, H. Wendt, S. Roux, N. Pustelnik, N. van Noord, L. van der Matten, E. Postma, J. Coddington, L. A. Daffner, H. Murata, H. Wilhelm, S. Wood, and M. Messier, “[Pursuing Automated Classification of Historic Photographic Papers from Raking Light Images](#),” *Journal of the American Institute for Conservation*, vol. 53, no. 3, pp. 159-170, 2014.
- C. R. Johnson, Jr., D. H. Johnson, I. Verslype, R. Lugtigheid, and R. G. Erdmann, “[Detecting Weft Snakes](#),” *Art Matters*, vol. 5, pp. 48-52, 2013.
- D. H. Johnson, C. R. Johnson, Jr., and R. G. Erdmann, “[Weave Analysis of Paintings on Canvas from Radiographs](#),” *Signal Processing* (Special Issue on Image Processing for Art Investigation), vol. 93, pp. 527-540, March 2013.
- W. Liedtke, C. R. Johnson, Jr., and D. H. Johnson, “[Canvas Matches in Vermeer: A Case Study in the Computer Analysis of Fabric Supports](#),” *Metropolitan Museum Journal*, vol. 47, pp. 99-106, 2012.
- P. Pérez d’Ors, C. R. Johnson, Jr., and D. H. Johnson, “[Velázquez in Fraga: a New Hypothesis about the Portraits of El Primo and Philip IV](#),” *The Burlington Magazine*, vol. CLIV, pp. 620-625, September 2012.
- L. van Tilborgh, T. Meedendorp, E. Hendriks, D. H. Johnson, C. R. Johnson, Jr., and R. G. Erdmann, “[Weave Matching and Dating of Van Gogh’s Paintings: An Interdisciplinary Approach](#),” *The Burlington Magazine*, vol. 153, pp. 112-122, February 2012.
- C. R. Johnson, Jr., D. H. Johnson, N. Hamashima, H. S. Yang, and E. Hendriks, “[On the Utility of Spectral-Maximum-Based Automated Thread Counting from X-Rays of Paintings on Canvas](#),” *Studies in Conservation*, vol. 56, no. 2, pp. 104-114, 2011.
- C. R. Johnson, Jr., E. Hendriks, I. J. Berezhnoy, E. Brevdo, S. M. Hughes, I. Daubechies, J. Li, E. Postma, and J. Z. Wang, “[Image Processing for Artist Identification: Computerized Analysis of Vincent van Gogh’s Painting Brushstrokes](#),” *IEEE Signal Processing Magazine* (Special Section - Signal Processing in Visual Cultural Heritage), vol. 25, pp. 37-48, July 2008.

SELECTED JOURNAL PUBLICATIONS IN SYSTEM IDENTIFICATION,
BLIND EQUALIZATION, AND ADAPTIVE FILTERING AND CONTROL

- C. R. Elevitch and C. R. Johnson, Jr., “A Procedure for Ranking Parameter Importance for Estimation in Predictive Mechanistic Models”, *Ecological Modelling*, vol. 419, March 2020.
- M. Sharp, A. Scaglione, and C. R. Johnson, Jr., “Sufficiently Informative Excitation for Estimation of Linear Responses Due to Sparse Scattering,” *IEEE Trans. on Signal Processing*, vol. 59, pp. 5353-5368, November 2011.
- A. G. Klein, C. R. Johnson, Jr., and P. Duhamel, “On Blind Equalization of Biorthogonal Signaling,” *IEEE Trans. on Signal Processing*, vol. 55, pp. 1421-1435, April 2007.
- J. M. Walsh, P. A. Regalia, and C. R. Johnson, Jr., “Turbo Decoding is Iterative Constrained Maximum Likelihood Sequence Detection,” *IEEE Trans. on Information Theory*, vol. 52, pp. 5426-5437, December 2006.
- R. K. Martin and C. R. Johnson, Jr., “Adaptive Equalization: Transitioning from Single-Carrier to Multicarrier Systems,” *IEEE Signal Processing Magazine*, vol. 22, pp. 108-122, November 2005.
- W. Chung, W. A. Sethares, and C. R. Johnson, Jr., “Timing Phase Offset Recovery Based on Dispersion Minimization,” *IEEE Trans. on Signal Processing*, vol. 53, pp. 1097-1109, March 2005.
- W. Chung, W. A. Sethares, and C. R. Johnson, Jr., “Performance Analysis of Blind Adaptive Phase Offset Correction Based on Dispersion Minimization,” *IEEE Trans. on Signal Processing*, vol. 52, pp. 1750-1759, June 2004.
- J. Balakrishnan, R. K. Martin, and C. R. Johnson, Jr., “Blind, Adaptive Channel Shortening by Sum-Squared Auto-Correlation Minimization (SAM),” *IEEE Trans. on Signal Processing*, vol. 51, pp. 3086-3093, December 2003.
- R. K. Martin, J. Balakrishnan, W. A. Sethares, and C. R. Johnson, Jr., “A Blind, Adaptive TEQ for Multicarrier Systems,” *IEEE Signal Processing Letters*, vol. 9, pp. 341-343, November 2002.
- R. A. Casas, R. R. Bitmead, C. A. Jacobson, and C. R. Johnson, Jr., “Prediction Error Methods for Limit Cycle Data,” *Automatica*, vol. 38, pp. 1753-1760, October 2002.
- D. R. Brown, H. V. Poor, S. Verdú, and C. R. Johnson, Jr., “Multiuser Detection for Out-of-Cell Cochannel Interference Mitigation in the IS-95 Downlink,” *Journal of VLSI Signal Processing* (Special Issue on Signal Processing for Wireless Communication Systems), vol. 3, pp. 217-233, January - March 2002.
- D. R. Brown, III, M. Motani, V. V. Veeravalli, H. V. Poor, and C. R. Johnson, Jr., “On the Performance of Linear Parallel Interference Cancellation,” *IEEE Trans. on Information Theory*, vol. 47, pp. 1957-1970, July 2001.
- C. A. Jacobson, C. R. Johnson, Jr., D. C. McCormick, and W. A. Sethares, “Stability of Active Noise Control Algorithms,” *IEEE Signal Processing Letters*, vol. 8, pp. 74-76, March 2001.
- P. Schniter and C. R. Johnson, Jr., “Bounds for the MSE Performance of Constant Modulus Estimators,” *IEEE Trans. on Information Theory*, vol. 46, pp. 2544-2560, November 2000.
- P. Schniter and C. R. Johnson, Jr., “Sufficient Conditions for the Local Convergence of Constant Modulus Algorithms,” *IEEE Trans. on Signal Processing*, vol. 48, pp. 2785-2796, October 2000.
- T. J. Endres, B. D. O. Anderson, C. R. Johnson, Jr., and M. Green, “Robustness to Fractionally-Spaced Equalizer Length Using the Constant Modulus Criterion,” *IEEE Trans. on Signal Processing*, vol. 47, pp. 544-548, February 1999.
- C. R. Johnson, Jr., P. Schniter, T. J. Endres, J. D. Behm, D. R. Brown, and R. A. Casas, “Blind Equalization Using the Constant Modulus Criterion: A Review,” *Proc. IEEE* (Special Issue on Blind System Identification and Estimation), vol. 86, pp. 1927-1950, October 1998.

- H. H. Zeng, L. Tong, and C. R. Johnson, Jr., “[Relationships Between the Constant Modulus and Wiener Receivers,](#)” *IEEE Trans. on Information Theory*, vol. 44, pp. 1523-1538, July 1998.
- J. P. LeBlanc, I. Fijalkow, and C. R. Johnson, Jr., “[CMA Fractionally Spaced Equalizers: Stationary Points and Stability under IID and Temporally Correlated Sources,](#)” *International Journal of Adaptive Control and Signal Processing* (Special Issue on Adaptive Channel Equalization), vol. 12, pp. 135-155, March 1998.
- I. Fijalkow, C. E. Manlove, and C. R. Johnson, Jr., “[Adaptive Fractionally Spaced Blind CMA Equalization: Excess MSE,](#)” *IEEE Trans. on Signal Processing*, vol. 46, pp. 227-230, January 1998.
- S. Lambbotharan, J. Chambers, and C. R. Johnson, Jr., “[Attraction of Saddles and Slow Convergence in CMA Adaptation,](#)” *Signal Processing*, vol. 59, pp. 335-340, 1997.
- J. R. Treichler, I. Fijalkow, and C. R. Johnson, Jr., “[Fractionally Spaced Equalizers: How Long Should They Really Be?,](#)” *IEEE Signal Processing Magazine*, vol. 13, pp. 65-81, May 1996.
- S. Dasgupta, C. R. Johnson, Jr., and A. M. Baksho, “[Characterizing Persistent Excitation for the Sign-Sign Equation Error Identifier,](#)” *Automatica*, vol. 29, pp. 1473-1489, November 1993.
- G. A. Williamson, C. R. Johnson, Jr., and B. D. O. Anderson, “[Locally Robust Identification of Linear Systems Containing Unknown Gain Elements with Application to Adapted IIR Lattice Models,](#)” *Automatica*, vol. 27, pp. 783-798, September 1991.
- Z. Ding, R. A. Kennedy, B. D. O. Anderson, and C. R. Johnson, Jr., “[Ill-Convergence of Godard Blind Equalizers in Data Communication Systems,](#)” *IEEE Trans. on Communications*, vol. 39, pp. 1313-1327, September 1991.
- G. J. Rey, R. R. Bitmead, and C. R. Johnson, Jr., “[The Dynamics of Bursting in Simple Adaptive Feedback Systems with Leakage,](#)” *IEEE Trans. on Circuits and Systems*, vol. 38, pp. 476-488, May 1991.
- W. A. Sethares, B. D. O. Anderson, and C. R. Johnson, Jr., “[Adaptive Algorithms with Filtered Regressor and Filtered Error,](#)” *Mathematics of Control, Signals, and Systems*, vol. 2, pp. 381-403, 1989.
- C. R. Johnson, Jr., S. Dasgupta, and W. A. Sethares, “[Averaging Analysis of Local Stability of a Real Constant Modulus Algorithm Adaptive Filter,](#)” *IEEE Trans. on Acoustics, Speech, and Signal Processing*, vol. 36, pp. 900-910, June 1988.
- I. M. Y. Mareels, R. R. Bitmead, M. Gevers, C. R. Johnson, Jr., R. L. Kosut, and M. A. Poubelle, “[How Exciting Can a Signal Really Be?,](#)” *Systems and Control Letters*, vol. 8, pp. 197-204, January 1987.
- D. A. Lawrence and C. R. Johnson, Jr., “[Recursive Parameter Identification Algorithm Stability Analysis via Pi-Sharing,](#)” *IEEE Trans. on Automatic Control*, vol. AC-31, pp. 16-24, January 1986.
- R. L. Kosut and C. R. Johnson, Jr., “[An Input-Output View of Robustness in Adaptive Control,](#)” *Automatica* (Special Issue on Adaptive Control), vol. 20, pp. 569-581, September 1984.
- C. R. Johnson, Jr., “[Adaptive IIR Filtering: Current Results and Open Issues,](#)” *IEEE Trans. on Information Theory* (Special Issue on Linear Adaptive Filtering), vol. IT-30, pp. 237-250, March 1984.
- B. D. O. Anderson and C. R. Johnson, Jr., “[Exponential Convergence of Adaptive Identification and Control Algorithms,](#)” *Automatica*, vol. 18, pp. 1-13, January 1982.
- G. C. Goodwin, C. R. Johnson, Jr., and K. S. Sin, “[Global Convergence for Adaptive One-Step-Ahead Optimal Controllers Based on Input Matching,](#)” *IEEE Trans. on Automatic Control*, vol. AC-26, pp. 1269-1273, December 1981.
- C. R. Johnson, Jr., M. G. Larimore, J. R. Treichler, and B. D. O. Anderson, “[SHARF Convergence Properties,](#)” *IEEE Trans. on Acoustics, Speech, and Signal Processing* (Special Issue on Adaptive Signal Processing), vol. ASSP-29, pp. 659-670, June 1981.

- M. G. Larimore, J. R. Treichler, and C. R. Johnson, Jr., “SHARF: An Algorithm for Adapting IIR Digital Filters,” *IEEE Trans. on Acoustics, Speech, and Signal Processing*, vol. ASSP-28, pp. 428-440, August 1980.
- C. R. Johnson, Jr., “A Convergence Proof for a Hyperstable Adaptive Recursive Filter,” *IEEE Trans. on Information Theory*, vol. IT-25, pp. 745-748, November 1979.
- C. R. Johnson, Jr. and E. Tse, “Adaptive Implementation of One-Step-Ahead Optimal Control via Input Matching,” *IEEE Trans. on Automatic Control*, vol. AC-23, pp. 865-872, October 1978.
- B. Widrow, J. M. McCool, M. G. Larimore, and C. R. Johnson, Jr., “Stationary and Nonstationary Learning Characteristics of the LMS Adaptive Filter,” *Proc. IEEE* (Special Issue on Adaptive Systems), vol. 64, pp. 1151-1162, August 1976.

Additional publications in [Google Scholar Listing](#).

PHD ADVISEES

- Dale A. Lawrence, *Adaptive System Stability Analysis via Energy Exchange*, 1985.
- William A. Sethares, *Quantized State Adaptive Algorithms*, 1987.
- Geoffrey A. Williamson, *Error System Stability in Adaptive Systems with Split Algorithms and Composite Errors*, 1989.
- Zhi Ding, *Application Aspects of Blind Adaptive Equalizers in QAM Data Communications*, 1990.
- Gonzalo J. Rey, *Quantitative Classification of the Dynamics of Adaptive Feedback Systems*, 1991.
- James P. LeBlanc, *Effects of Source Distributions and Correlation on Fractionally Spaced Blind Constant Modulus Algorithm Equalizers*, 1995.
- Thomas J. Endres, *Equalizing with Fractionally-Spaced Constant Modulus and Second-Order Statistics Blind Receivers*, 1997.
- Fernando L. de Victoria, *On the Application of Frame Theory to MMSE Fractionally-Spaced Equalizers*, 1998.
- Raul A. Casas, *Identification of Nonlinear Feedback Systems Operating in a Limit Cycle*, 1999.
- Donald R. Brown, *Parallel Interference Cancellation Multiuser Detection: Performance and Applications*, 2000.
- Philip Schniter, *Blind Estimation without Priors: Performance Convergence, and Efficient Implementation*, 2000.
- Jaiganesh Balakrishnan, *Directional Decision Feedback Equalization and MIMO Channel Training*, 2002.
- Wonzoo Chung, *Blind Parameter Estimation for Data Acquisition in Digital Communication Systems*, 2002.
- Richard K. Martin, *Blind Adaptive Equalization for Multicarrier Receivers*, 2004.
- Andrew G. Klein, *Equalization for Energy Efficient Modulation*, 2006.
- John M. Walsh, *Distributed Iterative Decoding and Estimation via Expectation Propagation: Performance and Convergence*, 2006.
- Craig R. Elevitch, *A System Identification Approach to Process-Based Plant Growth Model Reduced-Order Parameter Estimation*, 2018.