

# CURRICULUM VITA :: C. RICHARD JOHNSON, JR. :: MARCH 2021

## 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

- 2019 - present :: Senior Research Advisor, Frick Art Reference Library, New York, NY
- 2017 - present :: Visiting Research Professor, Conservation Center of the Institute of Fine Arts, New York University, New York, NY
- 2016 - 2018 :: Jacobs Fellow in Computational Arts and Humanities, Jacobs Technion-Cornell Institute, Cornell Tech, New York, NY
- 2013 - present :: Scientific Researcher, Rijksmuseum, Amsterdam, the Netherlands
- 2008 - present :: Geoffrey S. M. Hedrick Senior Professor of Engineering, Cornell University, Ithaca, NY
- 2007 - 11 :: Adjunct Research Fellow, Van Gogh Museum, Amsterdam, the Netherlands
- 1987 - present :: 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

## SELECTED BOOKS AND BOOK CHAPTERS

- C. R. Johnson, Jr., “Exploiting Weave Maps”, chapter 6 in *Counting Vermeer: Using Weave Maps to Study Vermeer’s Canvases*, C. R. Johnson, Jr. and W. A. Sethares, eds., RKD Studies, 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.
- 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, 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 Review of the British Association of Paper Historians*, No. 117, April 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,” 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](#),” *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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

[Google Scholar Listing](#)

[Personal Webpage](#)