

Professor Hans Joseph Johnson

The University of Iowa
Associate Professor
Electrical and Computer Engineering (ECE)
(319) 354 - 3538
hans-johnson@uiowa.edu
01/01/1990 - 12/31/2019

I. General Information

Employment History

Associate Professor, Electrical and Computer Engineering. (August 2014 - Present).

Associate Faculty, Department of Biomedical Engineering, College of Engineering. University of Iowa. (2008 - Present).

Assistant Professor, Department of Psychiatry, Psychiatry Iowa Neuroimaging Consortium, University of Iowa Hospitals and Clinics. (2009 - August 2014).

Adjunct Assistant Professor, Department of Electrical and Computer Engineering, University of Iowa. (2008 - 2009).

Associate Faculty, Department of Psychiatry, Psychiatry Iowa Neuroimaging Consortium, University of Iowa Hospitals and Clinics. (2006 - 2009).

Information Management III, Department of Psychiatry Imaging Lab, University of Iowa Hospitals and Clinics. (2003 - 2006).

System Administrator/System Programmer II, Department of Psychiatry Imaging Lab. (2002 - 2003).

Systems Programmer I, Department of Psychiatry Imaging Lab, University of Iowa Hospitals and Clinics. (2001 - 2002).

Awards and Honors

IEEE Senior Member, IEEE. (July 2019 - Present).

Lead Developer, Brain Research: Analysis of Images, Networks, and Systems. (2002 - Present).

Excellence in Undergraduate Teaching, Graduating Senior Engineering Class. (December 2018).

First Place Poster Presentation Iowa Medical Society, Iowa Medical Society. (May 2015).

Outstanding Research Advisor, College of Engineering. (April 2015).

Outstanding Research Advisor, College of Engineering. (April 2015).

National Alliance For Medical Image Computing Tutorial Contest, National Alliance For Medical Image Computing. (June 2014).

Lead Project Manager, Biomedical Informatics Research Network. (2009).

Lead Project Manager, Biomedical Informatics Research Network. (2002 - 2009).

IT Professional Development Award for training and certification as a Project Management Professional (PMP). (2007).

IT Professional Development Award for training and certification as a Project Management Professional (PMP). (2006 - 2007).

Organization of Human Brain Mapping. Inter-subject Co-registration Effects on Functional Imaging Voxelwise Statistics. (2003 - 2006).

Certificate of Achievement - Storage Resource Broker (SRB) Training, University of California, San Diego. (2002).

Certificate of Achievement - Storage Resource Broker (SRB) Training, University of California, San Diego. (2002).

Lead Developer, Brain Research: Analysis of Images, Networks, and Systems. (2002).

International conference, Information Processing in Medical Imaging. Landmark and Intensity-based consistent thin-plate spline image Registration. (2001).

Senator, Graduate Student Senate, University of Iowa Graduate Student Representative Body. (2001).

Student Member, Institute of Electrical and Electronic Engineers (IEEE), Institute of Electrical and Electronic Engineers (IEEE). (2001).

Senator, Graduate Student Senate, University of Iowa Graduate Student Representative Body. (1997 - 2001).

Student Member, Institute of Electrical and Electronic Engineers (IEEE), Institute of Electrical and Electronic Engineers (IEEE). (1995 - 2001).

Built prototype 18 processor Beowulf cluster, Hawkulf. (2000).

Chair, Computations Committee, Graduate Student Senate, University of Iowa Graduate Student Representative Body. (2000).

Chair, Computations Committee, Graduate Student Senate, University of Iowa Graduate Student Representative Body. (1998 - 2000).

Planning/execution of new laboratory space, CEIG Laboratory Infrastructure. (1997 - 2000).

Treasurer, Graduate Student Senate, University of Iowa Graduate Student Representative Body. (1999).

Treasurer, Graduate Student Senate, University of Iowa Graduate Student Representative Body. (1998 - 1999).

Member, Alpha Eta Mu Beta, National Biomedical Engineering Honors Society. (1997).

Member, Biomedical Engineering Society, National Biomedical Engineering Society. (1997).

Member, Tau Beta Pi, National Engineering Honors Society. (1997).

President, Alpha Eta Mu Beta, National Biomedical Engineering Honors Society. (1997).

Student Representative, Engineering Computations Committee, College of Engineering Advisory Committee. (1997).

The University of Iowa Honors Program, The University of Iowa. (1997).

Treasurer, Tau Beta Pi, National Engineering Honors Society. (1997).

President, Alpha Eta Mu Beta, National Biomedical Engineering Honors Society. (1996 - 1997).

Treasurer, Tau Beta Pi, National Engineering Honors Society. (1996 - 1997).

Member, Alpha Eta Mu Beta, National Biomedical Engineering Honors Society. (1995 - 1997).

Member, Tau Beta Pi, National Engineering Honors Society. (1995 - 1997).

Student Representative, Engineering Computations Committee, College of Engineering Advisory Committee. (1995 - 1997).

Member, Biomedical Engineering Society, National Biomedical Engineering Society. (1993 - 1997).

The University of Iowa Honors Program, The University of Iowa. (1992 - 1997).

Chair, Engineering Student Council, University of Iowa College of Engineering. (1996).

Vice President, Biomedical Engineering Society, National Biomedical Engineering Honors Society. (1996).

Chair, Engineering Student Council, University of Iowa College of Engineering. (1995 - 1996).

Vice President, Biomedical Engineering Society, National Biomedical Engineering Honors Society. (1995 - 1996).

Vice President, Alpha Eta Mu Beta, National Biomedical Engineering Honors Society. (1995).

Vice President, Alpha Eta Mu Beta, National Biomedical Engineering Honors Society. (1995).

Education

PhD, Electrical and Computer Engineering. University of Iowa, Iowa City, IA, 2002.

MS, Electrical and Computer Engineering. University of Iowa, Iowa City, IA, 2000.

BS, Biomedical Engineering, with Honors. University of Iowa, Iowa City, IA, 1997.

Licensures and Certifications

Professional Memberships

Insight Software Consortium.

Institute of Electrical and Electronic Engineers.

Iowa Institute of Biomedical Imaging Executive Committee.

United Way of Johnson and Washington Counties.

II. Teaching

Scheduled Teaching

Spring 2019 ECE: 5490: 0001.

Spring 2019 ECE: 5999: 3883.

Spring 2019 ECE: 5830: 0001.

Fall 2018 ECE: 5999: 2648.

Fall 2018 IGPI: 6520: 2239.

Fall 2018 ECE: 5820: 0001.

Spring 2018 ENGR: 2730: 0A01.

Spring 2018 ENGR: 2730: 0A02.

Spring 2018 ENGR: 2730: 0AAA.

Spring 2018 ENGR: 2730: 0B11.

Spring 2018 ENGR: 2730: 0B12.

Spring 2018 ENGR: 2730: 0BBB.

Spring 2018 ECE: 5999: 0013.

Spring 2018 IGPI: 6520: 8895.

Spring 2018 URES: 3992: 0287.

Fall 2017 ENGR: 2120: 0B37.

Fall 2017 ENGR: 2120: 0B38.

Fall 2017 ENGR: 2120: 0B39.

Fall 2017 ENGR: 2120: 0B40.

Fall 2017 ENGR: 2120: 0BBB.

Fall 2017 ECE: 3330: 0003.

Fall 2017 ECE: 3330: 0004.
Fall 2017 ECE: 5999: 8065.
Fall 2017 IGPI: 6520: 7227.
Fall 2017 URES: 3992: 6593.
Summer 2017 ENGR: 2730: 0A01.
Summer 2017 ENGR: 2730: 0A02.
Summer 2017 ENGR: 2730: 0AAA.
Summer 2017 ENGR: 2730: 0EXW.
Summer 2017 ECE: 7999: 6528.
Summer 2017 IGPI: 6520: 7228.
Summer 2017 URES: 3992: 6595.
Spring 2017 ENGR: 2730: 0B11.
Spring 2017 ENGR: 2730: 0B12.
Spring 2017 ENGR: 2730: 0BBB.
Spring 2017 ECE: 7999: 4029.
Spring 2017 IGPI: 6520: 4817.
Fall 2016 ENGR: 2730: 0BBB.
Fall 2016 IGPI: 6515: 3358.
Fall 2016 ECE: 3330: 0003.
Fall 2016 ECE: 3330: 0004.
Fall 2016 ECE: 7999: 3058.
Summer 2016 IGPI: 5015: 2691.
Summer 2016 BME: 5999: 2122.
Spring 2016 ECE: 5995: 0002.
Spring 2016 BME: 5999: 0047.
Fall 2015 055/ECE: 3330: 0A01.
Fall 2015 055/ECE: 3330: 0AAA.
Fall 2015 055/ECE: 3330: 0B02.

Fall 2015 055/ECE: 3330: 0BBB.
Fall 2015 051/BME: 5999: 0047.
Fall 2015 055/ECE: 7999: 0026.
Summer 2015 055/ECE: 7999: 0026.
Spring 2015 057/ENGR: 017: B11.
Spring 2015 057/ENGR: 017: B12.
Spring 2015 057/ENGR: 017: BBB.
Spring 2015 051/BME: 199: 047.
Spring 2015 055/ECE: 299: 026.
Fall 2014 055/ECE: 3300: B02.
Fall 2014 055/ECE: 3300: BBB.
Fall 2014 051/BME: 199: 047.
Fall 2014 055/ECE: 299: 026.
Spring 2014 051/BME: 5230: 001.
Spring 2014 051/BME: 199: 047.
Spring 2014 055/ECE: 299: 026.
Fall 2013 051/BME: 299: 047.
Fall 2013 055/ECE: 299: 026.
Spring 2013 051/BME: 299: 047.
Spring 2013 055/ECE: 299: 026.
Fall 2012 051/BME: 299: 047.
Fall 2012 055/ECE: 299: 026.
Spring 2012 051/BME: 299: 047.
Spring 2012 055/ECE: 299: 026.
Fall 2011 051/BME: 299: 047.
Spring 2011 051/BME: 5230: 001.
Spring 2011 051/BME: 299: 047.
Fall 2010 051/BME: 299: 047.

Spring 2010 051/BME: 5230: 001.

Spring 2010 051/BME: 299: 047.

Fall 2009 051/BME: 199: 047.

Spring 2009 051/BME: 5230: 001.

2013.

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Spring 2007.

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2003 - 2005.

Directed Student Learning

Dissertation Committee Chair

Dissertation Committee Chair, "Super-resolution of diffusion-weighted images using enhanced multi-spectral classification results." (February 2011 - April 2017).

Advised: Ali Ghayoor

Dissertation Committee Chair, "Development of image processing tools and procedures for analyzing multi-site longitudinal diffusion-weighted imaging studies." (July 2010 - January 2014).

Advised: Joy Matsui

Dissertation Committee Chair, "Machine-learning based automated segmentation tool development for large-scale multicenter MRI data analysis." (December 2009 - December 2013).

Advised: EunYoung Kim

Dissertation Committee Member

Dissertation Committee Member, "TBD Lung Segmentation Automatic Segmentation of Anatomical Structures in Pulmonary 4DCT." (August 2013 - November 2018).

Advised: Sarah Gerard

Dissertation Committee Member, "Automated Image-Based Estimation of Severity and Cause of Optic Disc Edema." (December 2017).
Advised: Jason Agne

Dissertation Committee Member, "Fronto-striatal circuitry in children at risk for Huntington's disease." (May 2016).
Advised: Jessica Lee

Dissertation Committee Member, "Automated Parcellation on the Surface of Human Cerebral Cortex Generated from MR Images." (May 2012).
Advised: Wen Li

Dissertation Committee Member, "Boundary-constrained inverse consistent image registration and its applications." (January 2011).
Advised: Dinesh Kumar

Master's Thesis Committee Chair

Master's Thesis Committee Chair, "ITERATIVE CEREBELLAR SEGMENTATION USING CONVOLUTIONAL NEURAL NETWORKS," Electrical And Computer Engineering. (August 2016 - November 2018).
Advised: Alex Gerard

Master's Thesis Committee Chair, "Automated Cortical Thickness Analysis of Human MRI Studies Using Machine Learning and High Performance Computing Resources." (August 2014 - April 2017).
Advised: David Ellis

Master's Thesis Committee Chair, "Development and Verification of Medical Image Analysis Tools Within the 3D Slicer Environment." (May 2016).
Advised: Jessica Forbes

Master's Thesis Committee Chair, "A Method for Automated Landmark Constellation Detection Using Evolutionary Principal Components and Statistical Shape Models." (2008 - January 2010).
Advised: Wei Lu

Master's Thesis Committee Chair, "Multi-structure Segmentation of Multimodal Brain Images using Artificial Neural Networks." (January 2007 - December 2009).
Advised: EunYoung Kim

Master's Thesis Committee Chair, "Atlas Based Brain Mask Segmentation using Thirion's Demons Algorithm." (2004 - 2006).
Advised: Vamsi Krishna Jammalamadaka

Master's Thesis Committee Member

Master's Thesis Committee Member, "Evaluating The Effect of Right-Censored Endpoint Transformation for Dimensionality Reduction of Radiomic Features of Oropharyngeal Cancer Patients," ECE. (January 2015 - May 2018).
Advised: Luka Zdilar

Master's Thesis Committee Member, "Identity the Shape Collapse Problem in Large Deformation Image Registration." (December 2016).
Advised: Wei Shao

Master's Thesis Committee Member, "An automated tissue classification pipeline for magnetic resonance images of infant brains using age-specific atlases and level set segmentation." (May 2016).

Advised: Andrew Metzger

Master's Thesis Committee Member, "Tissue preserving deformable image registration for 4DCT pulmonary images." (April 2016).

Advised: Bowen Zhao

Master's Thesis Committee Member, "Finite element modeling of trabecular bone from multi-row detector CT imaging." (December 2014).

Advised: Cheng Chen

Master's Thesis Committee Member, "Software architecture of the non-rigid image registration evaluation project." (July 2011).

Advised: Jeffrey Hawley

Postdoctoral Research Supervision

Postdoctoral Research Supervision, "Developing a robust segmentation pipeline that allows for consistent trajectory estimation of HD gene positive individuals across multiple MRI sites.." (October 2014 - October 2016).

Advised: Eun Young Kim

Postdoctoral Research Supervision, "Quantitative T1p Imaging in Premanifest Huntington Disease Reveals Changes Associated with Disease Progression." (June 2013 - December 2014).

Advised: Shafik Wassef

Supervised Research

Supervised Research, "Machine Learning and Visualization of Incomplete Healthcare Data," Electrical and Computer Engineering. (September 1, 2018 - May 13, 2019).

Advised: Alex Powers

Supervised Research, "Machine deep learning convolutional neural networks for automated human cerebellum tissue segmentation," Electrical and Computer Engineering. (September 1, 2017 - April 30, 2018).

Advised: Kevin Blicharski

Undergraduate Student Project Supervision

Undergraduate Student Project Supervision, "Enhanced Unit Testing for Machine Learning and Medical Imaging Toolkits." (January 2016 - December 2017).

Advised: Alexander Leinoff

Undergraduate Student Project Supervision, "Automatic Character Recognition Using Open CV." (January 2017 - May 2017).

Advised: Qitong Jin

Undergraduate Student Project Supervision, "Explicit Instantiation for the Insight Toolkit." (January 2016 - December 2016).

Advised: Zachary Williamson

Undergraduate Student Project Supervision, "BRAINSRefacer - An MRI pre-processing tool." (June 2016 - August 2016).
Advised: Jeffrey Obadal

Undergraduate Student Project Supervision, "Mattes Mutual Information Performance Improvements." (January 2015 - August 2015).
Advised: Adam Snyder

Undergraduate Student Project Supervision, "Knowledge Discovery from Derived Medical Imaging Data of Huntington's Disease." (January 2015 - May 2015).
Advised: Eric Pahl

Undergraduate Student Project Supervision, "ITK Data Model Interface for Matlab." (September 2014 - May 2015).
Advised: Eric Pahl

Undergraduate Student Project Supervision, "MRI T2 Hypointensities as a biomarker in prodromal HD." (June 2013 - December 2013).
Advised: Jolene Luther

Undergraduate Student Project Supervision, "Data Processing Workflow for PET Image Analysis." (September 2004 - May 2005).
Advised: Seth Alpers

Undergraduate Student Project Supervision, "Automated Neural Networks." (September 2003 - May 2004).
Advised: Jennifer Dempsy

Undergraduate Student Project Supervision, "Automated Neural Networks." (September 2003 - May 2004).
Advised: Mona Haeker (Garvin)

Mentoring

Other Teaching Contributions

Mentor Senior Design Project, Healthcare Data Collection in Rural Haiti. (September 2018 - May 2019).

Innovations in Teaching, Content-Rich Interactive Student Evaluation Platform, This project will provide instructors with a platform that allows delivery of content-rich evaluation questions in STEM-based courses. This project involves developing and deploying content generation tools, exemplary content-rich templates customized to the engineering curriculum, faculty training materials, and rapid individualized student feedback interfaces. (January 2018 - May 2019).

Workshop/Clinic, Uncover the secrets of GIT and become the master of your source code! (October 2018).

Workshop/Clinic, Biomedical Image Analysis in Python and R using SimpleITK Jupyter Notebooks, In this tutorial, we will use a hands-on approach utilizing Jupyter notebooks to explore and experiment with various SimpleITK features in the Python and R programming languages. Participants will follow along using their personal laptops, enabling them to explore the effects of code changes and parameter settings not covered by the instructors.

We will start by introducing the toolkit's two basic data elements, Images and Transformations. We will then explore the various features available in the toolkit's registration framework including: optimizer selection, the use of linear and deformable transformations, the embedded multi-resolution framework, self-calibrating optimizers and the use of callbacks for registration progress monitoring. We will then show how to use SimpleITK as a data augmentation tool for deep learning via spatial and intensity transformations and its use for segmentation evaluation. Finally, we will show how to set up a collaborative development environment using Jupyter Notebooks, with convenient remote data downloads and regression testing. (April 2018).

III. Research/Scholarship

Peer-Reviewed Journal Articles

1. Misiura, M. B., Ciarochi, J., Vaidya, J., Bockholt, J., Johnson, H. J., Calhoun, V. D., Paulsen, J. S., Turner, J. A., Others (2019). Apathy Is Related to Cognitive Control and Striatum Volumes in Prodromal Huntington's Disease. *Journal of the International Neuropsychological Society*, 25(5), 462--469.
2. Langbehn, D. R., Stout, J. C., Gregory, S., Mills, J. A., Durr, A., Leavitt, B. R., Roos, Raymond A C, Long, J. D., Owen, G., Johnson, H. J., Others (2019). Association of CAG Repeats With Long-term Progression in Huntington Disease. *JAMA neurology*.
3. Ciarochi, J. A., Johnson, H. J., Calhoun, V. D., Liu, J., Espinoza, F. A., Bockholt, H., Misiura, M., Caprihan, A., Plis, S., Paulsen, J., Others (2019). Concurrent Cross-Sectional and Longitudinal Analyses of Multivariate White Matter Profiles and Clinical Functioning in Pre-Diagnosis Huntington Disease. *Journal of Huntington's disease*(Preprint), 1--21.
4. Tang, X., Ross, C. A., Johnson, H., Paulsen, J. S., Younes, L., Albin, R. L., Ratnanather, J. T., Miller, M. I. (2019). Regional subcortical shape analysis in premanifest Huntington's disease. *Human brain mapping*, 40(5), 1419--1433.
5. Langbehn, D. R., Stout, J. C., Gregory, S., Mills, J. A., Durr, A., Leavitt, B. R., Roos, Raymond A C, Long, J. D., Owen, G., Johnson, H. J., Borowsky, B., Craufurd, D., Reilmann, R., Landwehrmeyer, G. B., Scahill, R. I., Tabrizi, S. J., Groups, f. t.-H., D, T.-O. H. (2019). Association of CAG Repeats With Long-term Progression in Huntington Disease Association of CAG Repeats With Long-term Progression in Huntington Disease Association of CAG Repeats With Long-term Progression in Huntington Disease. *JAMA Neurology*. <https://doi.org/10.1001/jamaneurol.2019.2368> (Published)
6. Espinoza, F. A., Liu, J., Ciarochi, J., Turner, J. A., Vergara, V. M., Caprihan, A., Misiura, M., Johnson, H. J., Long, J. D., Bockholt, J. H., Paulsen, J. S., Calhoun, V. D. Dynamic functional network connectivity in Huntington's disease and its associations with motor and cognitive measures. *Human Brain Mapping*. https://api.elsevier.com/content/abstract/scopus_id/85059630599
7. Tang, X., Luo, Y., Chen, Z., Huang, N., Johnson, H. J., Paulsen, J. S., Miller, M. I. (2018). A fully-automated subcortical and ventricular shape generation pipeline preserving smoothness and anatomical topology. *Frontiers in neuroscience*, 12, 321. (Published)
8. Baake, V., Coppen, E. M., Van Duijn, E., Dumas, E. M., van den Bogaard, Simon J A, Scahill, R. I., Johnson, H., Leavitt, B., Durr, A., Tabrizi, S. J., Others (2018). Apathy and atrophy of subcortical brain structures in Huntington's disease: A two-year follow-up study. *NeuroImage: Clinical*, 19, 66--70. (Published)

9. Hong, Y., O'Donnell, L. J., Savadjiev, P., Zhang, F., Wassermann, D., Pasternak, O., Johnson, H., Paulsen, J., Vonsattel, J.-P., Makris, N., Others, Donnell, L. J. O., Savadjiev, P., Zhang, F., Wassermann, D., Pasternak, O., Johnson, H., Paulsen, J., Nikos, J.-p. V., Carl, M., Yogesh, F. W. (2018). Genetic load determines atrophy in hand cortico-striatal pathways in presymptomatic Huntington's disease. *Human brain mapping*, 39(10), 3871--3883. (Published)
10. Kim, R. E. Y., Yun, C.-H., Thomas, R. J., Oh, J.-H., Johnson, H. J., Kim, S., Lee, S., Seo, H. S., Shin, C. (2018). Lifestyle-dependent brain change: a longitudinal cohort MRI study. *Neurobiology of aging*, 69, 48--57. (Published)
11. Espinoza, F. A., Turner, J. A., Vergara, V. M., Miller, R. L., Mennigen, E., Liu, J., Misiura, M. B., Ciarochi, J., Johnson, H. J., Long, J. D., Others, Bockholt, H. J., Magnota, V. A., Paulsen, J. S., Calhoun, V. D. (2018). Whole-brain connectivity in a large study of Huntington's disease gene mutation carriers and healthy controls. *Brain connectivity*, 8(3), 166--178. <http://online.liebertpub.com/doi/10.1089/brain.2017.0538> (Published)
12. Lahr, J., Minkova, L., Tabrizi, S.J., Stout, J.C., Kil"oppel, S., Scheller, E., Coleman, A., Decolongon, J., Fan, M., Koren, T., Jauffret, C., Justo, D., Lehericy, S., Nigaud, K., Valabr`egue, R., Schoonderbeek, A., 't Hart, E.P., Crawford, H., Gregory, S., Hensman Moss, D., Johnson, E., Read, J., Owen, G., Papoutsi, M., Berna, C., Razi, A., Rees, G., Scahill, R.I., Craufurd, D., Reilmann, R., Weber, N., Stout, J., Labuschagne, I., Orth, M., Landwehrmeyer, G.B., Langbehn, D., Johnson, H., Long, J., Mills, J. (2018). Working memory-related effective connectivity in Huntington's disease patients. *Frontiers in Neurology*, 9(JUN). (Published)
13. Ciarochi, J. A., Liu, J., Calhoun, V., Johnson, H., Misiura, M., Bockholt, H. J., Espinoza, F. A., Caprihan, A., Plis, S., Turner, J. A., Paulsen, J. S. (2018). High and Low Levels of an NTRK2-Driven Genetic Profile Affect Motor- and Cognition-Associated Frontal Gray Matter in Prodromal Huntington's Disease. *Brain sciences*, 8(7). (Published)
14. Liu, J., Ciarochi, J., Calhoun, V. D., Paulsen, J. S., Jeremy Bockholt, H., Johnson, H. J., Long, J. D., Lin, D., Espinoza, F. A., Misiura, M. B., Caprihan, A., Turner, J. A. (2018). Genetics modulate gray matter variation beyond disease burden in prodromal Huntington's disease. *Frontiers in Neurology*, 9(MAR). https://api.elsevier.com/content/abstract/scopus_id/85044657625 (Published)
15. Yaniv, Z., Lowekamp, B. C., Johnson, H. J., Beare, R. SimpleITK Image-Analysis Notebooks: a Collaborative Environment for Education and Reproducible Research. *Journal of Digital Imaging*, 1-14. https://api.elsevier.com/content/abstract/scopus_id/85035092406
16. Norton, I., Essayed, W. I., Zhang, F., Pujol, S., Yarmarkovich, A., Golby, A. J., Kindlmann, G., Wasserman, D., Estepar, R. S., Rathi, Y., Pieper, S., Kikinis, R., Johnson, H. J., Westin, C. F., O'Donnell, L. J. (2017). SlicerDMRI: Open source diffusion MRI software for brain cancer research. *Cancer Research*, 77(21), e101-e103. https://api.elsevier.com/content/abstract/scopus_id/85035002530 (Published)
17. Johnson, E. B., Gregory, S., Johnson, H. J., Durr, A., Leavitt, B. R., Roos, R. A., Rees, G., Tabrizi, S. J., Scahill, R. I. (2017). Recommendations for the use of automated gray matter segmentation tools: Evidence from Huntington's disease. *Frontiers in Neurology*, 8(OCT). https://api.elsevier.com/content/abstract/scopus_id/85031126066 (Published)
18. Wu, D., Faria, A. V., Younes, L., Mori, S., Brown, T., Johnson, H., Paulsen, J. S., Ross, C. A., Miller, M. I. (2017). Mapping the order and pattern of brain structural MRI changes using

- change-point analysis in premanifest Huntington's disease. *Human Brain Mapping*, 38(10), 5035-5050. https://api.elsevier.com/content/abstract/scopus_id/85021396482 (Published)
19. Moss, D. J., Hensman, Tabrizi, S. J., Mead, S., Lo, K., Pardiñas, A. F., Holmans, P., Jones, L., Langbehn, D., Leavitt, B. R., Coleman, A., Roos, R., Santos, R. D., Durr, A., Decolongo, J., Durr, A., Sturrock, A., Bardin, E., Ret, C. J., Justo, D., Lehericy, S., Marelli, C., Nigaud, K., Valabrègue, R., van den Bogaard, S. J.A., Dumas, E. M., van der Grond, J., t'Hart, E. P., Jurgens, C., Witjes-Ane, M. N., Arran, N., Callaghan, J., Stopford, C., Frost, C., Jones, R., Hobbs, N., Lahiri, N., Ordidge, R., Owen, G., Pepple, T., Read, J., Say, M., Wild, E., Patel, A., Fox, N. C., Gibbard, C., Malone, I., Crawford, H., Whitehead, D., Keenan, S., Cash, D. M., Bena, C., Bechtel, N., Bohlen, S., Man, A. H., Kraus, P., Axelson, E., Wang, C., Acharya, T., Lee, S., Monaco, W., Campbell, C., Queller, S., Whitlock, K., Campbell, C., Campbell, M., Frajman, E., Milchman, C., O'Regan, A., Labuschagne, I., Stout, J., Landwehrmeyer, B., Craufurd, D., Scahill, R., Hicks, S., Kennard, C., Johnson, H., Tobin, A., Rosas, H. D., Reilmann, R., Borowsky, B., Pourchot, C., Andrews, S. C., Bachoud-Lévi, A. C., Bentivoglio, A. R., Biunno, I., Bonelli, R., Burgunder, J. M., Dunnett, S., Ferreira, J., Handley, O., Heiberg, A., Illmann, T., Landwehrmeyer, G. B., Levey, J., Ramos-Arroyo, M. A., Nielsen, J., Koivisto, S. P., Päiväranta, M., Roos, R. A.C., Sebastián, A. R. (2017). Identification of genetic variants associated with Huntington's disease progression: a genome-wide association study. *The Lancet Neurology*, 16(9), 701-711. https://api.elsevier.com/content/abstract/scopus_id/85020897879 (Published)
 20. Shaffer, J. J., Ghayoor, A., Long, J. D., Kim, R. E., Lourens, S., O'Donnell, L. J., Westin, C. F., Rathi, Y., Magnotta, V., Paulsen, J. S., Johnson, H. J. (2017). Longitudinal diffusion changes in prodromal and early HD: Evidence of white-matter tract deterioration. *Human Brain Mapping*, 38(3), 1460-1477. https://api.elsevier.com/content/abstract/scopus_id/85007574511 (Published)
 21. Misiura, M. B., Lourens, S., Calhoun, V. D., Long, J., Bockholt, J., Johnson, H., Zhang, Y., Paulsen, J. S., Turner, J. A., Liu, J., Kara, B., Fall, E. (2017). Cognitive Control, Learning, and Clinical Motor Ratings Are Most Highly Associated with Basal Ganglia Brain Volumes in the Premanifest Huntington's Disease Phenotype. *Journal of the International Neuropsychological Society*, 23(2), 159-170. https://api.elsevier.com/content/abstract/scopus_id/85013168268 (Published)
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Areas of Research Interest

Primary Research Interest: My primary research interest involves accelerating research discovery through the efficient analysis of large scale, heterogeneous, multi-site data collections using modern High Performance Computing (HPC) resources. Specifically, I direct research efforts to deploy solutions that harness the power of modern High Performance Computing infrastructures (many-core laptops/accelerator cards, distributed storage solutions, centralized data repositories, and large cluster computing resources) so that well established single-user analysis tools can be repurposed and deployed for the analysis and knowledge extraction from large data repositories.

In the next 5 years I intend to take a larger role in training and development of University-wide analysis resources. The growth of the Iowa Institute for Biomedical Imaging, the High Performance Computing infrastructure at the University of Iowa, and the new medical imaging building space dedicated toward research offer many opportunities for bridging the technological and medical expertise that exists in the University of Iowa Engineering, Liberal Arts, and Medical schools respectively.

I have been significantly involved in several imaging and informatics projects that focused on developing the tools necessary to monitor, manage, and foster collaborative data sharing for large-scale multi-site projects. I am a Co-PI for the data coordinating center of the 27-site NeuroNext (www.neuronext.org) clinical trial initiative. I was a member of the 11 site function Biomedical Informatics Research Network (fBIRN). I am the only engineer on the 4 site international TRACK-HD steering committee. Finally, I am the core leader for medical imaging and a member of the Executive Committee of the NIH funded 28-site longitudinal PREDICT-HD study.

My formal training in Biomedical, Electrical, and Computer Engineering provide a solid foundation for my academic research objective of accelerating research through development of automated software processes. I am a lead developer on 14 projects hosted by the Neuroinformatics Tools and Resources Clearing House (www.nitrc.org), the 13th most prolific contributor to the Insight Toolkit package (www.itk.org), and president of the Insight Software Consortium (www.insightsoftwareconsortium.org).

In summary, I have the training, expertise, and hands-on experience to drive the tool and process development needed to successfully deploy collaborative data sharing and data processing for both human and animal studies.

Primary Research Interest: My primary research interest involves accelerating research discovery through the efficient analysis of large scale, heterogeneous, multi-site data collections using modern High Performance Computing (HPC) resources. Specifically, I direct research efforts to deploy solutions that harness the power of modern High Performance Computing infrastructures (many-core laptops/accelerator cards, distributed storage solutions, centralized data repositories, and large cluster computing resources) so that well established single-user analysis tools can be repurposed and deployed for the analysis and knowledge extraction from large data repositories.

In the next 5 years I intend to take a larger role in training and development of University-wide analysis resources. The growth of the Iowa Institute for Biomedical Imaging, the High Performance Computing infrastructure at the University of Iowa, and the new medical imaging building space dedicated toward research offer many opportunities for bridging the technological and medical expertise that exists in the University of Iowa Engineering, Liberal Arts, and Medical schools respectively.

I have been significantly involved in several imaging and informatics projects that focused on developing the tools necessary to monitor, manage, and foster collaborative data sharing for large-scale multi-site projects. I am a Co-PI for the data coordinating center of the 27-site NeuroNext (www.neuronext.org) clinical trial initiative. I was a member of the 11 site function Biomedical Informatics Research Network (fBIRN). I am the only engineer on the 4 site international TRACK-HD steering committee. Finally, I am the core leader for medical imaging and a member of the Executive Committee of the NIH funded 28-site longitudinal PREDICT-HD study.

My formal training in Biomedical, Electrical, and Computer Engineering provide a solid foundation for my academic research objective of accelerating research through development of automated software processes. I am a lead developer on 14 projects hosted by the Neuroinformatics Tools and Resources Clearing House (www.nitrc.org), the 13th most prolific contributor to the Insight Toolkit package (www.itk.org), and president of the Insight Software Consortium (www.insightsoftwareconsortium.org).

In summary, I have the training, expertise, and hands-on experience to drive the tool and process development needed to successfully deploy collaborative data sharing and data processing for both human and animal studies.

Grants and Contracts

Calhoun, V. (Principal Investigator), Johnson, H. J. (Co-Principal), "Imaging and Genetics in Huntington's Disease," Sponsored by NIH, NINDS, \$282,299.00. (September 15, 2013 - August 31, 2016).

Johnson, H. J. (Co-Principal), Westin (Principal Investigator), "Characterization of White Matter in Huntington's Disease Using Diffusion MRI," Sponsored by NIH, NINDS, \$167,720.00. (January 1, 2014 - December 31, 2015).

Kim (Principal Investigator), Johnson, H. J. (Consultant), "Developing a Robust Segmentation Pipeline That Allows for Consistent Trajectory Estimation of HD Gene Positive Individuals Across Multiple Longitudinal MRI Sites," Sponsored by Huntington's Disease Society of America, \$0.00. (November 1, 2014 - October 31, 2015).

Johnson, H. J., "TRACK-ON: Continuous Morphometric Analysis," Sponsored by University College London/CHDI Foundation, Inc, \$762,202.00. (January 1, 2012 - June 30, 2015).

Johnson, H. J., "ARRA: Use-case Based Complex Testing and Training on the ITK-V4 Framework," Sponsored by National Institutes of Health, \$124,287.00. (July 20, 2010 - June 20, 2011).

Completed

Johnson, H. J. (Principal Investigator), "Integration of ITKv4 Registration for SimpleITK and Isolate Performance Issues for ITKv4," Sponsored by NIH, NLM, \$17,462.00. (May 23, 2014 - November 22, 2014).

Johnson, H. J. (Principal Investigator), "Training Materials for ITKv4 and SimpleITK," Sponsored by NIH, NLM, \$15,247.00. (September 16, 2013 - September 15, 2014).

Rao (Principal Investigator), Johnson, H. J. (Co-Investigator), "Functional Connectivity in Premanifest Huntington's Disease," Sponsored by NIH, NINDS, \$0.00. (September 26, 2012 - August 31, 2014).

Johnson, H. J. (Co-Investigator), Paulsen, J. (Principal Investigator), "Predict-HD, Expedition of Clinical Trials in Preclinical HD," Sponsored by Cure Huntington's Disease Initiative, Inc, Private Industry, \$23,902,849.00. (May 1, 2002 - August 31, 2014).

Miller/Ross (Principal Investigator), Johnson, H. J. (Co-Investigator), "Basal Ganglia Shape Analysis and Circuitry in Huntington's Disease," Sponsored by NIH, NINDS, \$156,725.00. (September 26, 2012 - July 31, 2014).

Johnson, H. J., "IT Professional Development Award," The University of Iowa, \$1,500.00. (2006 - 2007).

Currently Under Review

"MIQA Phase II Technical Proposal," Sponsored by NIH, Department, \$3.57.

Declined

Johnson, H. (Principal Investigator), Lendasse, A. (Co-Principal), "QuBBD: Collaborative Research: Personalized Modeling of Disease Trajectory from Incomplete Heterogeneous Data," Sponsored by National Science Foundation and National Institutes of Health, Federal, \$261,324.00. (May 1, 2017 - May 1, 2020).

Funded

Paulsen, J. J. (Supporting), Paulsen, J. S. (Supporting), "Neurodegenerative and Neurodevelopmental Subcortical Shape Diffeomorphometry," Sponsored by Cmed, Federal, \$343,125.00. (June 1, 2017 - January 1, 2022).

Johnson, H. (Supporting), "Tracing Spread of Pathology Within The HD Brain via Automated Neuroimaging," Sponsored by National Institutes of Health, Federal, \$69,625.00. (July 1, 2017 - June 30, 2020).

"Content Rich Interactive Student Evaluation Platform," Sponsored by University of Iowa, College, \$24,514.70. (May 1, 2018 - December 31, 2019).

Johnson, H. J. (Supporting), Sonka, M. (Supporting), Long, J. D. (Principal Investigator), "Early detection of Huntington's Disease: Longitudinal analysis of basal ganglia and cortical thickness," Sponsored by NIH, Federal, \$96,350.00. (July 1, 2016 - June 30, 2019).

Johnson, H. J. (Supporting), Nopoulos, P. (Principal Investigator), "Longitudinal Assessment of Brain Structure and Function in Myotonic Dystrophy," Sponsored by US Department of Health & Human Services, National Institutes of Health, Federal, \$1,139,264.00. (July 1, 2015 - June 30, 2019).

Coffey, C. (Principal Investigator), Johnson, H. J. (Co-Investigator), "Network of Excellence in Neuroscience Clinical Trials (NEXT-DCC)," Sponsored by National Institutes of Health, Federal, \$4,697,569.00. (September 2011 - June 2018).

Coffey, C. (Principal Investigator), Johnson, H. J. (Co-Investigator), "Network of Excellence in Neuroscience Clinical Trials (NEXT-DCC)," Sponsored by National Institutes of Health, Federal, \$4,697,569.00. (September 2011 - June 2018).

Johnson, H. (Co-Principal), Westin, C. F. (Principal Investigator), "Characterization of White Matter in Huntington's Disease Using Diffusion MRI," Sponsored by NIH, NINDS, Federal, \$335,440.00. (January 1, 2014 - December 31, 2016).

Johnson, H. (Principal Investigator), Langbehn, D. (Principal Investigator), "Track HD & Track-ON: Biostatistics and Neuroimaging Analysis," Sponsored by CHDI Foundation, Private Industry, \$3,315,809.00. (November 2007 - December 30, 2016).

Kim, E. Y. (Principal Investigator), Johnson, H. J. (Mentor), "Developing a Robust Segmentation Pipeline That Allows for Consistent Trajectory Estimation of HD Gene Positive Individuals Across Multiple Longitudinal MRI Sites," Sponsored by Huntington's Disease Society of America, Private Industry, \$69,845.00. (November 1, 2014 - October 31, 2016).

Calhoun, V. (Principal Investigator), Johnson, H. (Co-Principal), Turner, J. (Co-Principal), "Imaging and Genetics in Huntington's Disease," Sponsored by NIH, NINDS, Federal, \$282,299.00. (September 15, 2013 - August 31, 2016).

Johnson, H. (Co-Investigator), Paulsen, J. (Principal Investigator), "Neurobiological Predictors of Huntington's Disease (Predict HD)," Sponsored by NIH, NINDS, Federal, \$44,101,475.00. (April 1, 2000 - August 30, 2016).

Johnson, H. (Co-Principal), Feigin, A. (Principal Investigator), "Brain Network Imaging: A Novel Biomarker for Preclinical Huntington's Disease," Sponsored by NIH/NINDS, Federal, \$376,316.00. (July 1, 2013 - June 30, 2016).

Johnson, H. (Co-Principal), Gerig, G. (Principal Investigator), "4D Shape Analysis for Modeling Spatiotemporal Change Trajectories in Huntington's Disease," Sponsored by NIH, NINDS, Federal, \$148,963.00. (September 30, 2012 - January 30, 2016).

Johnson, H. J. (Co-Principal), Gerig, G. (Principal Investigator), "4D Shape Analysis for Modeling Spatiotemporal Change Trajectories in Huntington's Disease," Sponsored by NIH, NINDS, \$148,963.00. (September 30, 2012 - September 29, 2015).

Rao, S. (Principal Investigator), Johnson, H. J. (Co-Investigator), "Functional Connectivity in Premanifest Huntington's Disease," Sponsored by NIH, NINDS, \$186,294.00. (September 26, 2012 - August 31, 2015).

Johnson, H. (Supporting), "CSF-Enhanced-Aggregation Biomarker to Monitor Huntington's Disease Progression," Sponsored by National Institutes of Health, NINDS, Federal, \$67,539.00. (September 1, 2014 - August 30, 2015).

Johnson, H. J. (Co-Investigator), Paulsen, J. (Principal Investigator), "Neurobiological Predictors of Huntington's Disease (Predict HD)," Sponsored by NIH, NINDS, Federal, \$44,101,475.00. (April 1, 2000 - August 30, 2015).

Johnson, H. (Co-Investigator), Paulsen, J. S. (Supporting), "Genetic Modifiers of PREDICT-HD Phenotypes," Sponsored by National Institutes of Health, NINDS, Federal, \$89,456.00. (September 1, 2013 - December 30, 2014).

Johnson, H. (Principal Investigator), "Integration of ITKv4 Registration for SimpleITK and Isolate Performance Issues for ITKv4," Sponsored by NIH, NLM, Federal, \$22,439.00. (May 23, 2014 - November 22, 2014).

Johnson, H. (Principal Investigator), "Training Materials for ITKv4 and SimpleITK," Sponsored by NIH, NLM, Federal, \$23,024.00. (September 16, 2013 - September 15, 2014).

Miller, M. (Principal Investigator), Johnson, H. (Co-Principal), "Basal Ganglia Shape Analysis and Circuitry in Huntington's Disease," Sponsored by NIH, NINDS, Federal, \$236,665.00. (September 26, 2012 - July 31, 2014).

Kikinis, R. (Principal Investigator), Johnson, H. J. (Co-Investigator), "National Alliance for Medical Image Computing (NAMIC)," Sponsored by National Institutes of Health, Federal, \$460,248.00. (September 30, 2010 - June 30, 2014).

Kikinis, R. (Principal Investigator), Johnson, H. (Co-Investigator), "National Alliance for Medical Image Computing (NAMIC)," Sponsored by National Institutes of Health, Federal, \$658,863.00. (September 30, 2010 - June 30, 2014).

Johnson, H. (Co-Principal), Luther, J. (Principal Investigator), "HDSA Donald A King Summer Research Fellowship," Sponsored by Huntington's Disease Society of America, Private Industry, \$500.00. (May 1, 2013 - August 15, 2013).

Johnson, H. J. (Principal Investigator), "Track HD: Biostatistics and Neuroimaging Analysis," \$0.00. (November 2007 - December 2012).

Johnson, H. J. (Principal Investigator), "Track HD: Continuous Morphometric Analysis." (January 2007 - December 2011).

Johnson, H. J. (Principal Investigator), "HDNI: Coordination of Image Collections, Development of Software Tools and HDNI Project Management," Sponsored by High Q Foundation, Private Industry. (May 2002 - August 2011).

Johnson, H. (Principal Investigator), Magnotta, V. A. (Co-Principal), "Iowa ITKv4 Maintenance," Sponsored by National Library of Medicine, Federal, \$40,000.00. (September 1, 2010 - August 30, 2011).

Johnson, H. (Supporting), Magnotta, V. A. (Principal Investigator), "ARRA: Refactoring the ITK FEM Framework", Sponsored by the National Library of Medicine, "Sponsored by National Library of Medicine, Federal, \$225,000.00. (June 1, 2010 - May 30, 2011).

Johnson, H. (Supporting), Magnotta, V. A. (Principal Investigator), "Images, Landmarks, and ROI's," Sponsored by National Library of Medicine, Federal, \$95,250.00. (June 1, 2010 - May 30, 2011).

Johnson, H. (Co-Investigator), Magnotta, V. A. (Principal Investigator), "BRAINS Morphology and Image Analysis," Sponsored by National Institutes of Health, Federal, \$965,055.00. (May 2007 - April 2010).

Johnson, H. J. (Co-Investigator), Magnotta, V. A. (Principal Investigator), "Continued Development and Maintenance of Software," Sponsored by National Institutes of Health, Federal. (May 2007 - April 2010).

Johnson, H. J. (Co-Investigator), Andreasen, N. (Principal Investigator), "Phenomenology and Classification of Schizophrenia," Sponsored by National Institutes of Health, Federal. (January 1979 - April 2010).

Johnson, H. (Supporting), O'Leary, D. (Principal Investigator), "First fBIRN," Sponsored by National Institutes of Health, Federal, \$638,333.00. (February 1, 2006 - December 31, 2009).

Johnson, H. (Principal Investigator), "Enterprise Storage in a Collaborative Neuroimaging Environment," Sponsored by National Center for Research Resources, National Institutes of Health, Federal, \$404,542.00. (June 2007 - May 2008).

Johnson, H. J. (Principal Investigator), "Enterprise Storage in a Collaborative Neuroimaging Environment," Sponsored by National Center for Research Resources, National Institutes of Health, Federal. (June 2007 - May 2008).

Johnson, H. (Supporting), Andreasen, N. C. (Principal Investigator), "Brain Imaging in the Major Psychoses: Testing the Specificity of the Cognitive Dysmetria Model," Sponsored by National Institutes of Health, Federal, \$1,190,538.00. (February 1, 2005 - January 30, 2008).

Johnson, H. J. (Principal Investigator), "High Performance Computing Allocation," Sponsored by National Partnership for Advanced Computational Infrastructure. (2007).

Johnson, H. (Principal Investigator), "HDNI: Coordination of Image Collections, Development of Software Tools and HDNI Project Management," Sponsored by High Q Foundation, Private Industry, \$72,716.00. (May 2006 - August 2007).

Johnson, H. (Principal Investigator), "High Performance Computing Allocation," Sponsored by National Partnership for Advanced Computational Infrastructure, Federal, \$0.00. (March 2006 - March 2007).

Johnson, H. J. (Principal Investigator), "Huntington's Disease Neuroimaging Initiative (HDNI) Preliminary Project Organization," Sponsored by High Q Foundation, Private Industry, \$0.00. (2006).

Johnson, H. (Co-Investigator), Andreasen, N. C. (Principal Investigator), "Phenomenology and Classification of Schizophrenia," Sponsored by National Institutes of Health, Federal, \$2,575,896.00. (January 1, 2004 - April 30, 2006).

Johnson, H. J. (Principal Investigator), "Synthesis of Brain Population Summary Atlases," Sponsored by Nellie Ball Research Trust, Private Industry. (January 2004 - December 2004).

Johnson, H. (Principal Investigator), "Synthesis of Brain Population Summary Atlases," Sponsored by Nellie Ball Research Trust, Private Industry, \$12,700.00. (January 2004 - December 2004).

Not Funded

"Batten Disease," Private Non Profit.

"An Integrated Approach to Studying Neurofibromatosis Type I," Sponsored by National Institute of Neurological Disorders and Stroke Special Emphasis Panel, Department.

Presentations

Verde, A. R., Berger, J. B., Farzinfar, M., Kaiser, A., Chanon, V. W., Boettiger, C. A., Matsui, J., Sharma, A., Goodlett, C., Shi, Y., Gerig, G., Gouttard, S., Vachet, C., Zhu, H., Styner, M. A., Gupta, A., Johnson, H. J. (Author Only), "UNC-Utah NA-MIC DTI framework: Atlas Based Fiber Tract Analysis with Application to a Study of Nicotine Smoking Addiction," National Alliance For Medical Image Computing, Salt Lake City, Utah, United States. (January 9, 2016).

Johnson, H. J. (Presenter Only), UI Tech Forum, "Managing complexities of collecting, curating and performing analysis of "Big Data": An Exploration of the tools and engineering approaches used to support an international multi-site longitudinal study," University of Iowa. (June 2014).

Johnson, H. J. (Presenter Only), UI Tech Forum, "Managing complexities of collecting, curating and performing analysis of "Big Data": An Exploration of the tools and engineering approaches used to support an international multi-site longitudinal study," University of Iowa. (June 2014).

SPIE Conference, "Focus on cutting-edge research and developments in medical imaging.." (February 2013).

SPIE Conference, "Focus on cutting-edge research and developments in medical imaging.." (February 2013).

Johnson, H. J., Medical Image Computing and Computer Assisted Intervention Conference, "Insight Toolkit (ITK) V4.0," Medical Image Computing and Computer Assisted Intervention 2011. (2011).

Johnson, H. J., Medical Image Computing and Computer Assisted Intervention Conference, "Insight Toolkit (ITK) V4.0," Medical Image Computing and Computer Assisted Intervention 2011, Toronto. (2011).

Johnson, H. J., Medical Image Computing and Computer Assisted Intervention Conference, "SimpleITK," Medical Image Computing and Computer Assisted Intervention 2011. (2011).

Johnson, H. J., Medical Image Computing and Computer Assisted Intervention Conference, "SimpleITK," Medical Image Computing and Computer Assisted Intervention 2011, Toronto. (2011).

Johnson, H. J., The Society for Neuroscience 2008, "White matter volume in pre-diagnosed Huntington's disease." (November 15, 2008).

Johnson, H. J., The Society for Neuroscience 2008, "White matter volume in pre-diagnosed Huntington's disease," Washington, District of Columbia. (November 15, 2008).

Johnson, H. J., Radiologic Society of North American INFORAD Conference, "ITK, Neural-Nets, and Brains2," Radiologic Society of North America. (2003).

Johnson, H. J., Radiologic Society of North American INFORAD Conference, "ITK, Neural-Nets, and Brains2," Radiologic Society of North America. (2003).

Johnson, H. J., "Information Processing in Medical Imaging. Landmark and Intensity-based consistent thin-plate spline image Registration." (2001).

Johnson, H. J., "Information Processing in Medical Imaging. Landmark and Intensity-based consistent thin-plate spline image Registration." (2001).

Conference Presentation

Kumar, R. (Presenter & Author), Sigurdsson, G., Al Jayyousi, B. B., Gabe, L. M., 9th Annual Scientific Meeting, "LowEnergy Imaging Protocol at 80 kVp Leads to Overestimation of Coronary Calcium Score that is not Corrected by Adjustment of Minimum Detection Threshold," Society of Cardiovascular Computed Tomography. (July 10, 2014).

Matsui, J. T., Johnson, H. J., Magnotta, V. A., Doris Duke Clinical Research Fellowship Meeting, "Evaluating White Matter Changes in Huntington's Disease Using Diffusion Tensor Imaging." (2010).

Kim, E. U., Johnson, H. J., SPIE Conference, "Multi-structure Segmentation of Multi-modal Brain Images Using Artificial Neural Networks." (August 2010).

Pierson, R. K., Ross, C. A., Aylward, E. H., Nopoulos, P., Johnson, H. J., Magnotta, V. A., Langbehn, D., Paulsen, J., Organization for Human Brain Mapping (OHMB), "Global and Regional Brain Morphology in Subjects with Huntington's Disease Prior to Diagnosis." (2009).

Say, M., Bechtel, N., Sturrock, A., Bogaard, S., Jauffret, C., Bohlen, S., Mills, J., Acharya, T., Langbehn, D., Johnson, H. J., German Academy of Neurology Meeting, "Quantitative motor phenotype assessment in pre-manifest and symptomatic Huntington's disease: tongue force analysis differentiates between disease stages and provides high phenotype correlation. Cross sectional results from the TRACK-HD Study." (September 2009).

Pierson, R., Harris, G., Magnotta, V. A., Johnson, H. J., SPIE Medical Imaging Conference, "MI09-MI102-214 Maximum Uniformity Summation Heuristic—a highly accurate, simple method for intracranial delineation (Iowa MUSH brain)." (February 7, 2009).

Turner, J. A., Bockholt, H. J., Calhoun, V. D., Johnson, H. J., The Society for Neuroscience 2008, "A comparison of volumetric methods in a multi-site study of schizophrenia." (November 15, 2008).

Rowe, K. C., Pierson, R. K., Aylward, E. H., Paulsen, J., Nopoulos, P., Beglinger, L., Johnson, H. J., Magnotta, V. A., Langbehn, D., Society for Neuroscience 2008, "White Matter Volume in Pre-diagnosed Huntington's Disease." (November 15, 2008).

Pierson, R. (Author Only), Brumm, M. (Author Only), McCormick, L. (Author Only), Ponto, L. L. (Author Only), Johnson, H. J. (Presenter & Author), Magnotta, V. A. (Author Only), Annual

- Association of Convulsive Therapy Meeting, "Increased left subgenual cingulate and hippocampal metabolism after ECT: correlations to antidepressant and antipsychotic response," Association of Convulsive Therapy. (May 2007).
- Johnson, H. J., European Huntington's Disease Network, "Accelerating Brain Research through Automated Software Testing," European Huntington's Disease Network. (September 2006).
- Johnson, H. J., Wallenberg Neuroscience Center, "Accelerating Brain Research through Automated Software Testing," Wallenberg Neuroscience Center. (May 2006).
- Johnson, H. J., Organization of Human Brain Mapping, "Accelerating Brain Research through Automated Software Testing," Organization of Human Brain Mapping. (June 2005).

Invited Lecture

- 8th Plenary Meeting of European Huntington's Disease Network (EHDN), European Huntington's Disease Network (EHDN). (September 19, 2014).
- Johnson, H. J. (Presenter Only), IMAG Group, "Managing complexities of collecting, curating and performing analysis of "Big Data": An Exploration of the tools and engineering approaches used to support an international multi-site longitudinal study," University of Iowa. (May 2014).
- NINDS Huntington's Disease Biomarker and Diagnostic Criteria Workshop. (February 2013).
- Johnson, H. J., National Institute of Neurological Disorders and Stroke Huntington's Disease Biomarker and Diagnostic Criteria Workshop, "Focus on identifying resources available and determining ways to share and display availability," National Institute of Neurological Disorders and Stroke. (February 2013).
- Johnson, H. J., Annual NeuroNEXT Meeting, "Focus on new techniques for treating neurological diseases," NeuroNEXT. (February 2013).
- Johnson, H. J., National Alliance for Medical Imaging Computing All Hands Meeting, "Focus on coordination and planning amongst collaborators and report to NIH officers," National Alliance for Medical Imaging Computing (NA-MIC). (January 2013).
- Johnson, H. J., National Centers for Biomedical Computing (NCBC) Showcase Meeting, "Focus on the research, training, and outreach in biocomputational science," National Institutes of Health. (November 2012).
- Johnson, H. J., National Library of Medicine Conference, National Library of Medicine. (October 2012).
- Johnson, H. J., National Institute of Neurological Disorders and Stroke Huntington's Disease Workshop, "Focus on the current state of knowledge in Huntington's disease biomarker and clinical criteria development," National Institute of Neurological Disorders and Stroke. (October 2012).
- Johnson, H. J., Presentation at New Horizons Computer Learning Center, "Introduction to Project Management," New Horizons Computer Learning Center. (2007).
- Johnson, H. J., Laboratory of Neuroimaging, UCLA, "Accelerating Brain Research through Automated Software Testing," University of California, Los Angeles. (March 2006).

Oral

8th Plenary Meeting of European Huntington's Disease Network (EHDN), European Huntington's Disease Network (EHDN), Barcelona, Spain. (September 19, 2014).

Kumar, R. (Presenter & Author), Sigurdsson, G., Al Jayyousi, B. B., Gabe, L. M., 9th Annual Scientific Meeting, "LowEnergy Imaging Protocol at 80 kVp Leads to Overestimation of Coronary Calcium Score that is not Corrected by Adjustment of Minimum Detection Threshold," Society of Cardiovascular Computed Tomography, San Diego, California. (July 10, 2014).

Johnson, H. J. (Presenter Only), IMAG Group, "Managing complexities of collecting, curating and performing analysis of "Big Data": An Exploration of the tools and engineering approaches used to support an international multi-site longitudinal study," University of Iowa. (May 2014).

NINDS Huntington's Disease Biomarker and Diagnostic Criteria Workshop. (February 2013).

Johnson, H. J., National Institute of Neurological Disorders and Stroke Huntington's Disease Biomarker and Diagnostic Criteria Workshop, "Focus on identifying resources available and determining ways to share and display availability," National Institute of Neurological Disorders and Stroke. (February 2013).

Johnson, H. J., Annual NeuroNEXT Meeting, "Focus on new techniques for treating neurological diseases," NeuroNEXT, Bethesda, Maryland. (February 2013).

Johnson, H. J., National Alliance for Medical Imaging Computing All Hands Meeting, "Focus on coordination and planning amongst collaborators and report to NIH officers," National Alliance for Medical Imaging Computing (NA-MIC). (January 2013).

Johnson, H. J., National Centers for Biomedical Computing (NCBC) Showcase Meeting, "Focus on the research, training, and outreach in biocomputational science," National Institutes of Health, Bethesda, Maryland. (November 2012).

Johnson, H. J., National Library of Medicine Conference, National Library of Medicine. (October 2012).

Johnson, H. J., National Institute of Neurological Disorders and Stroke Huntington's Disease Workshop, "Focus on the current state of knowledge in Huntington's disease biomarker and clinical criteria development," National Institute of Neurological Disorders and Stroke. (October 2012).

Matsui, J. T., Johnson, H. J., Magnotta, V. A., Doris Duke Clinical Research Fellowship Meeting, "Evaluating White Matter Changes in Huntington's Disease Using Diffusion Tensor Imaging." (2010).

Kim, E. U., Johnson, H. J., SPIE Conference, "Multi-structure Segmentation of Multi-modal Brain Images Using Artificial Neural Networks." (August 2010).

Pierson, R. K., Ross, C. A., Aylward, E. H., Nopoulos, P., Johnson, H. J., Magnotta, V. A., Langbehn, D., Paulsen, J., Organization for Human Brain Mapping (OHMB), "Global and Regional Brain Morphology in Subjects with Huntington's Disease Prior to Diagnosis," San Francisco, California. (2009).

Say, M., Bechtel, N., Sturrock, A., Bogaard, S., Jauffret, C., Bohlen, S., Mills, J., Acharya, T., Langbehn, D., Johnson, H. J., German Academy of Neurology Meeting, "Quantitative motor phenotype assessment in pre-manifest and symptomatic Huntington's disease: tongue force analysis differentiates between disease stages and provides high phenotype correlation. Cross sectional results from the TRACK-HD Study." (September 2009).

- Pierson, R., Harris, G., Magnotta, V. A., Johnson, H. J., SPIE Medical Imaging Conference, "MI09-MI102-214 Maximum Uniformity Summation Heuristic—a highly accurate, simple method for intracranial delineation (Iowa MUSH brain)," Orlando, Florida. (February 7, 2009).
- Turner, J. A., Bockholt, H. J., Calhoun, V. D., Johnson, H. J., The Society for Neuroscience 2008, "A comparison of volumetric methods in a multi-site study of schizophrenia," Washington, District of Columbia. (November 15, 2008).
- Rowe, K. C., Pierson, R. K., Aylward, E. H., Paulsen, J., Nopoulos, P., Beglinger, L., Johnson, H. J., Magnotta, V. A., Langbehn, D., Society for Neuroscience 2008, "White Matter Volume in Pre-diagnosed Huntington's Disease," Washington, District of Columbia. (November 15, 2008).
- Johnson, H. J., Presentation at New Horizons Computer Learning Center, "Introduction to Project Management," New Horizons Computer Learning Center, Hiawatha, Iowa. (2007).
- Pierson, R. (Author Only), Brumm, M. (Author Only), McCormick, L. (Author Only), Ponto, L. L. (Author Only), Johnson, H. J. (Presenter & Author), Magnotta, V. A. (Author Only), Annual Association of Convulsive Therapy Meeting, "Increased left subgenual cingulate and hippocampal metabolism after ECT: correlations to antidepressant and antipsychotic response," Association of Convulsive Therapy, San Diego, California. (May 2007).
- Johnson, H. J., European Huntington's Disease Network, "Accelerating Brain Research through Automated Software Testing," European Huntington's Disease Network, Blankenburg, Belgium. (September 2006).
- Johnson, H. J., Wallenberg Neuroscience Center, "Accelerating Brain Research through Automated Software Testing," Wallenberg Neuroscience Center, Lund, Sweden. (May 2006).
- Johnson, H. J., Laboratory of Neuroimaging, UCLA, "Accelerating Brain Research through Automated Software Testing," University of California, Los Angeles, University of California, Los Angeles. (March 2006).
- Johnson, H. J., Organization of Human Brain Mapping, "Accelerating Brain Research through Automated Software Testing," Organization of Human Brain Mapping, Toronto, Canada. (June 2005).

Poster

- Hobbs, N. Z., Farmer, R. E., Rees, E. M., Cole, J. H., Haider, S., Malone, I. B., Sprengelmeyer, R., Johnson, H. J., Mueller, H., Sussmuth, S. D., Roos, R., Durr, A., Frost, C., Scahill, R. I., Landwehrmeyer, B., Tabrizi, S. J., EHDN. (2014).
- Hobbs, N. Z., Farmer, R. E., Rees, E. M., Cole, J. H., Haider, S., Malone, I. B., Sprengelmeyer, R., Johnson, H. J., Mueller, H., Sussmuth, S. D., Roos, R., Durr, A., Frost, C., Scahill, R. I., Landwehrmeyer, B., Tabrizi, S. J., "6-, 9- and 15-Month Change in Cortical Thickness and Region-of-Interest Volume and Diffusion Metrics in Huntington's Disease: Informing Trial Design," EHDN, Barcelona. (2014).
- Johnson, E., Rees, E., Labuschagne, I., Durr, A., Leavitt, B., Roos, R., Johnson, H., Hobbs, N., Crawford, H., Langbehn, D., others, Journal of Neurology, Neurosurgery & Psychiatry, "E04 Cortical Thinning Of The Occipital Lobe In Huntington's Disease And Associations With Cognitive Performance," Journal of Neurology, Neurosurgery & Psychiatry. (2014).

- Crawford, H., Gregory, S., Hobbs, H., Johnson, H., Cole, J., Rees, E., Malone, I., Sprengelmeyer, R., Durr, A., Leavitt, B., others, Journal of Neurology, Neurosurgery & Psychiatry, "E11 Association Between Brain Volume and White Matter Microstructure in Healthy Controls," Journal of Neurology, Neurosurgery & Psychiatry. (2014).
- Gregory, S., Scahill, R., Durr, A., Leavitt, B., Roos, R., Johnson, H., Langbehn, D., Rees, G., Tabrizi, S., others, Journal of Neurology, Neurosurgery & Psychiatry, "E15 Structural Connectivity In Huntington's Disease," Journal of Neurology, Neurosurgery & Psychiatry. (2014).
- Gregory, S., Scahill, R., Stopford, C., Orth, M., Durr, A., Leavitt, B., Roos, R., Langbehn, D., Johnson, H., Rees, G., others, Journal of Neurology, Neurosurgery & Psychiatry, "E16 Diffusion Tensor Imaging And Neuropsychiatric Disturbance In Huntington's Disease," Journal of Neurology, Neurosurgery & Psychiatry. (2014).
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Seminar

- "SimpleITK: An Interactive, Python-Based Introduction to SimpleITK with the Insight Segmentation and Registration Toolkit (ITK)," International Symposium on Biomedical Imaging: From Nano to Macro, Prague, CZ. (April 2016).
- "ITK in Biomedical Research and Commercial Applications ," SPIE Medical Imaging, San Diego, California. (February 2016).
- "UI3 GIT Workshop," Iowa Informatics Institute, Iowa City, Iowa. (November 2015).
- "Engineering Git Workshop," Engineering Computer Services, Iowa City, Iowa. (September 2015).
- "3D Slicer Workshop," University of Iowa, Iowa City, Iowa. (November 2014).
- "2013 MICCAI - MICCAI DTI Tractography Challenge on Peritumoral White Matter Anatomy for Neurosurgical Decision-Making," MICCAI, Nagoya, Japan. (September 2013).
- "BRAINSCamp," University of Iowa, Iowa City, Iowa. (August 2013).
- "3D Slicer Workshop," University of Iowa, Iowa City, Iowa. (March 2012).
- "2011 MICCAI Shortcourse -- Insight Toolkit (ITK) V4.0," MICCAI, Toronto, Canada. (September 2011).
- "2011 MICCAI Shortcourse -- SimpleITK," MICCAI, Toronto, Canada, Iowa. (September 2011).
- "Driving Biological Project Kickoff," University of Iowa, Iowa City, Iowa. (October 2010).

"Namic Training Workshop," University of Iowa, Iowa City, Iowa. (April 2010).

"ITK Programming Short Course," University of Iowa, Iowa City, Iowa. (February 2007).

Workshop

Johnson, H. J. (Coordinator/Organizer), Lowekamp, B. (Co-Presenter), Yaniv, Z. (Co-Presenter), International Symposium on Biomedical Imaging (ISBI), "Biomedical Image Analysis in Python and R using SimpleITK Jupyter Notebooks," IEEE, Washington, District of Columbia, United States. (April 4, 2018).

Intellectual Property

IV. Service

Professional Service

Member, Development Team for the NIFTI (Neuroimaging Informatics Technology Initiative) File Format.

Review Editor, Frontiers in Brain Imaging Methods.

Guest Associate Editor, Frontiers Neuroinformatics Methods.

Reviewer, IEEE Transactions on Medical Imaging.

Reviewer, NeuroImage.

Reviewer, Neuropsychopharmacology.

Member, SPIE, an International Society Advancing an Interdisciplinary Approach to the Science and Application of Light.

Member, Steering Committee for the National Library of Medicine Supported Insight Toolkit for Medical Image Processing.

Member.

Officer, Treasurer. (June 2018 - Present).

Insight Software Consortium. (January 2010 - Present).

Member. (2007 - Present).

Member, Steering Committee for TRACK-HD Multi-site International Imaging Study of Huntington's Disease. (2006 - Present).

Member, Insight Software Consortium. (February 2004 - Present).

Member, contributed to and implemented software development best practices guidelines as defined by the National Alliance for Medical Image Computing, Insight Toolkit Oversight Committee. (2004 - Present).

Contributing Developer, for common file I/O format formally approved and adopted by major functional imaging software packages, NIH NIfTI (Neuroimaging Informatics Technology Initiative). (2004 - Present).

Professional Member. (2001 - Present).

Officer, President. (2010 - 2018).

(December 2006 - December 2016).

(June 2006 - September 2016).

Epilepsy CWoW Review ZNS1 SRB-L(07) NIH Grant Reviewer. (May 2016 - June 2016).

Public/Community Service

Computations Committee, Iowa Institute of Biomedical Imaging (IIBI). (December 2007 - Present).

Johnson and Washington County United Way Capital Campaign Committee. (September 2013 - March 2014).

NIH NIfTI (Neuroimaging Informatics Technology Initiative). (2004 - 2006).

University, College, Department Service

College

Faculty Advisor, IEEE Student Group. (May 2018 - Present).

Member, College of Engineering 5 Year Research Strategic Planning. (August 11, 2018 - May 2019).

Chair, EFC Technology Committee. (September 2016 - August 2018).

Member, EFC Technology Committee. (September 2015 - August 2018).

Department

Chair, MSEIT Admissions Committee. (August 26, 2019 - Present).

Chair, ECE Graduate Admissions Committee. (August 2019 - Present).

Member, ECE Graduate Admissions Committee. (August 2015 - May 2019).

Officer, Secretary, ECE Faculty Secretary. (August 2015 - July 2016).

Coordinator, Iowa Neuroimaging Consortium. (January 2006 - August 2015).

University

Member, Iowa Institute of Artificial Intelligence. (September 1, 2019 - Present).

Faculty Advisor, HACK Iowa Student Group. (September 2017 - Present).

Member, Iowa Institute of Biomedical Imaging Computations Committee. (April 2011 - Present).

Member, High Performance Computing Policy Committee. (March 2011 - Present).

Media Contributions