Brian Avants

Curriculum Vitae

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Education

2005 **Ph.D.**, *The University of Pennsylvania*, Philadelphia, PA, *Bioengineering*.
2002 **M.S.**, *The University of Pennsylvania*, Philadelphia, PA, *Computer Science*.
1998 **B.A.**, *New College of Florida*, Sarasota, FL, *Physics*.

Postgraduate Training and Fellowships

2006 Research Fellow, Radiology, University of Pennsylvania

Professional Appointments

2012 Assistant Professor of Radiology, University of Pennsylvania
2010 Research Associate, Radiology, University of Pennsylvania

Specialty Certification

2008–2013 Human Subjects Research Training University of Pennsylvania

Awards and Honors

2012 Advanced Normalization Tools (ANTs) Software Selected to provide "Standard Setting" image registration results for MICCAI 2013 Multi-Atlas Segmentation Challenge: 4D cardiac, brain and multimodality canine leg MR images
2012 All top finishers in 2012 MICCAI multi-atlas segmentation used ANTs
2010 ANTs finished *1st overall* in an unbiased EMPIRE10 international lung mapping competition
2009 ANTs finished in *1st rank* in an unbiased Klein 2009 international brain mapping competition
2007 Young Investigator Award, General Medical Computing, MICCAI
2003 Best Poster Award SPIE Medical Imaging
1995 Future Healthcare Researcher Scholarship, Humana Health Care
1994 National Merit Scholarship, New College of Florida, Sarasota, FL

Editorial Positions

Topic Editor - Frontiers in Neuroinformatics: ITK topic

Ad hoc Reviewer - Nature Neuroscience

Ad hoc Reviewer - Neuroimage

Ad hoc Reviewer - IEEE Transaction on Medical Imaging

Ad hoc Reviewer - Pediatrics

Ad hoc Reviewer - Medical Physics

Ad hoc Reviewer - Human Brain Mapping

Ad hoc Reviewer - IEEE Pattern Analysis Machine Intelligence

Ad hoc Reviewer - Medical Image Analysis

Academic and Institutional Committees

2013 Grant Reviewer - Alzheimer's Association

2013 Consultant, American College of Radiology Head Injury Institute Information Technology Committee

2010–present Insight ToolKit Version 4 Development Leader and regular contributor to this large-scale industry-academic collaborative effort sponsored by NLM

2011–present International Neuroinformatics Coordinating Facility Registration and Atlasing Task Force Member (youtube video)

2006–present Spatial Transformations Informatics Technology Initiative (SIFTI) member

2006–present Neuroimaging Informatics Tools and Resources Clearinghouse member

Major Academic and Clinical Teaching Responsibilities

2012–present Organizer of Provost-sponsored Penn Interdisciplinary Seminar Series on multi-modality brain mapping: See brainomics link for full list of activities

2013 Hosted Moriah Thomason for talk on Fetal Connectome

2013 Hosted Mert Sabuncu for talk on Relevance Vector Machines

2012 Hosted David Van Essen for talk on Human Connectome Project

2012–present Doctoral committee member for Efstathios D Gennatas

2010–present Advising Ben Kandel, Doctoral student, Bioengineering; Ben's work was awarded an oral presentation at IPMI-2013

2010–present Co-advising Paramveer Dhillon, Doctoral student, Computer Science with Professor Lyle Ungar; Paramveer's recent work was an awarded an oral presentation at PRNI-2013

Lectures by Invitation

2013 "Multivariate Medical Imaging Analysis with R", MICCAI 2013, Nagoya, Japan Sep 2013

2013 "Multi-Modality Analysis", CMROI Workshop, University of Pennsylvania, Philadelphia, PA Mar 2013

2012 "Early Home Environment Impacts Cortical Thickness in Young Adulthood", Chinese Academy of Sciences, Beijing, China May 2012

2012 "A Unified Image Registration Framework for ITKv4", National Library of Medicine, Bethesda, MD Oct 2012

2012 "A Unified Registration Framework for ITKv4," WBIR 2012, Nashville, TN Jul 2012

2012 "Early Home Environment Impacts Cortical Thickness in Young Adulthood," Society for Neuroscience Press Conference, New Orleans, LA Oct 2012

2012 "Multivariate Methods for Integrating Multiple Modalities in Brain Mapping", Incheon National University, Incheon, South Korea May 2012

2012 "Eigenanatomy Methods for Multivariate Brain Mapping", University of California, San Francisco Jun 2012

2011 "Open Source Neonatal Brain Mapping," Washington University at St. Louis, St. Louis, MO Jan 2011

2011 "Multivariate analyses improve detection power for cortical longitudinal change in dementia", Society for Neuroscience Meeting, Washington D.C. Nov 2011

2011 "Modern analytics for neuroimaging," University of California, Los Angeles Dec 2011

2011 "Multivariate methods in neuroimaging", Washington Univ. at St. Louis Feb 2011

2011 "ITKv4 Image Registration Tutorial", MICCAI 2011, Toronto, Canada Sep 2011

2010 "Open Source in Medical Imaging" Inst. of Automation, Chinese Academy of Sciences, Beijing, China. Sep 2010

2010 “Open Source Image Registration”, National Library of Medicine, Bethesda, MD Jun 2010

2010 "Multivariate Longitudinal Correlation of Atrophy in White Matter and Gray Matter" MICCAI, Beijing, China. Sep 2010

2010 "Advanced ITK-Based Image Registration,” NLM, Bethesda, MD. Jul 2010

2010 “Sparse Unbiased Analysis of Anatomical Variance in Longitudinal Neuroimaging,” MICCAI 2010, Beijing China. (45 of 786 submissions accepted for oral presentation). Sep 2010

2009 “Grammatical comprehension and longitudinal adolescent brain development: a multivariate DTI and T1 analysis,” Human Brain Mapping 2009, San Francisco, CA. Jun 2009

2009 “Democratizing Hippocampus Labeling,” Columbia University, NY, NY. Jul 2009

2009 “Multivariate Analysis of the Adolescent Brain and its Association with Language Development,” Columbia University, NY, NY. Jul 2009

2009 “Follow-Up on Effects of Prenatal Cocaine Exposure on the Young Adult Brain,” Eastern SPR, Philadelphia, PA. Mar 2009

2009 “Multivariate Methods and Applications for Neuroimaging,” SRI, Menlo Park, CA. Jul 2009

2008 “The Longitudinal Effect of Neurodegeneration of Language Network Neuroanatomy and Cognition,” Pendergrass Symposium, Univ. of Penn. Philadelphia, PA Jun 2008

2008 “Template-based Brain Mapping with Diffeomorphisms,” Janelia Farm, Ashburn, Virginia. Sep 2008

2008 “Multivariate Template-based Retinotopic Mapping,” Stanford Vision Science Group, Stanford University, Palo Alto, CA. Oct 2008

2007 “Symmetric Shape Averaging in the Diffeomorphic Space", International Symposium Biomedical Imaging, Washington DC. Apr 2007

2007 “Spatiotemporal Normalization for Longitudinal Analysis of Gray Matter Atrophy in Frontotemporal Dementia,” MICCAI 2007, Brisbane, Australia. Oct 2007

2007 Tutorial on Neuromorphometry, MICCAI 2006, Copenhagen, Denmark. Oct 2006

2007 “Geodesic shape averaging,” IEEE International Symposium on Biomedical Imaging 2006, Alexandria, VA Apr 2006

2007 “Mapping Statistical Patterns in Medical Images via Diffeomorphisms,” Univ. of Pennsylvania, CIS 520 lecture, Philadelphia, PA. Nov 2005

2005 “Shape Optimizing Diffeomorphisms in Medical Imaging,” ISI, Utrecht, NL Jul 2005

Grants

Pending

IARPA-sponsored Knowledge Representation in Neural Systems (KRNS), IARPA-BAA-12-05, 50% effort (Role in grant: Image Analysis Lead)

Neuroscience Neuroimaging Center, NIH, P30-NS045839-07, 9/2013-8/2018 (Detre, John, M.D., PI), $499,727/annual direct costs, 10% effort (Role in grant: Collaborator, To provide support for technical aspects of neuroimaging using MRI.)

Current

Age, Hearing Loss, And Sentence Comprehension: Neural Correlates, National Institute On Aging/Nih/Dhhs, 5-R01-AG-038490-05, 9/2012-7/2013 (Murray Grossman, PI), $291,978/annual direct costs (Role in grant: Co-PI)

Continued Development and Maintenance of ITK-SNAP 3D Image Segmentation Software, NIH, R01-EB014346-01, 9/2011-8/2015 (Yushkevich, Paul A., Ph.D., PI), $350,824/annual direct costs (Role in grant: Collaborator)

TDP-43 Proteinopathies in ALS-Dementia, NIH, P01-AG032953-02, 9/2010-8/2015 (Lee, Virginia/Grossman, Murray, PI), $729,272/annual direct costs (Role in grant: Collaborator)

Fundamental Refactoring Of Deformable Image Registration In Itk With Distributed Computing And Gpu Acceleration, National Library Of Medicine, HHSN276201000492P, 6/2010-6/2013 (JAMES C GEE, PI), $472,861/annual direct costs (Role in grant: Co-PI)

In Utero Cocaine Exposure: Adolescent & Young Adult Neurocognitive Outcome, Children's Hospital of Philadelphia, R01-DA14129-08, 8/2007-4/2013 (Gee, James C., Ph.D., PI), $102,515/annual direct costs (Role in grant: Collaborator, To explore the effects of gestational cocaine exposure on neurocognitive outcome of adolescents and young adults)

Past

Longitudinal Multi-model Neuroimaging of Natural Recovery after Traumatic Brain Injury: A Pilot Study, Moss Rehab Research Institute/NIH, 2/2011-1/2012 (Avants, Brian Ph.D., PI), $7,764/annual direct costs (Role in grant: PI)

Parkinsons Disease & Dementia, NIH, P50-NS053488-04S1, 6/2010-5/2012 (Trojanowski/Grossman, PI), $132,641/annual direct costs (Role in grant: Collaborator)

Pediatric Template Of Brain Perfusion, National Institute Of Mental Health/Nih/Dhhs, 3-R01-MH-080892-01A2S1, 9/2009-5/2010 (JiongJiong Wang, PI) $0/annual direct costs, (Role in grant: Co-PI)

Tract-Specific Analysis of Brain White Matter, NIH, R01-NS065347-02, 9/2009-8/2012 (Gee, James C., Ph.D., PI), $370,667/annual direct costs, (Role in grant: Collaborator)

Advanced Neuroimages Registration Methods: Effects of Prenatal Cocaine Exposure, NIH, 9/2008-9/2011 (James C. Gee, PI: Brian Avants, Co-Investigator), $354,375/annual direct costs, (Role in grant: Co-PI)

The Longitudinal Effect of Neurodegeneration onLanguage-Network Neuroanatomy and Cognition, University of Pennsylvania, Institute of Aging, 6/2008-1/2011 (James C. Gee, PI: Brian Avants, Co-Investigator), (Role in grant: Co-PI)

Long Term Effects of Prenatal Cocaine Exposure, NIH , 4/2007-1/2011 (Hallam Hurt, PI), (Role in grant: Research Scientist)

Shape Optimizing Diffeomorphisms for Computational Biology, NIH - UCLA Center for Computational Biology, R01-EB006266, 4/2006-3/2010 (James C. Gee, PI) (Role in grant: Research Scientist)

Surface-based Cortical Analysis in ITK: Segmentation, Conformal Flattening and Statistics, NLM-NIH ITK Development Grant, 8/2004-6/2009 (James C. Gee, PI, Role in grant: Co-PI, Open source development)

Bioengineering Training in Cardiovascular Pathophysiology, Institute for Medicine and Engineering Training GrantUniversity of Pennsylvania, Philadelphia, PA, 9/2002-6/2010 (Peter Davies, PI), (Role in grant: Trainee)

Media Coverage

2012 Daily Mail UK article on SFN 2012 presentation

2012 Washington post article on SFN 2012 presentation

2012 PENN medicine press publicity for our MICCAI 2012 segmentation competition win: article

Professional Skills

2000–present Software Engineering & Programming - C++, CMake, R, Bash, Rst, LaTeX, Git, Gerrit, others as needed

Visualization: e.g. a gource of ANTs development

Presentations: e.g. a Prezi about ANTs (WIP)

Reproducible science as a teaching tool: e.g. ANTs tutorial

Other examples: slideshow

Professional Memberships

2011–present The Organization for Human Brain Mapping (OHBM)

2011–present The International Society for Magnetic Resonance in Medicine (ISMRM)

Languages

English **Mothertongue**

Spanish **Intermediate** *Conversational*

Publications

[1] Geoffrey K. Aguirre, Andras M. Komaromy, Artur V. Cideciyan, David H. Brainard, Tomas S. Aleman, Alejandro J. Roman, Brian B. Avants, James C. Gee, Marc Korczykowski, William W. Hauswirth, Gregory M. Acland, Gustavo D. Aguirre, and Samuel G. Jacobson. Canine and human visual cortex intact and responsive despite early retinal blindness from rpe65 mutation. *PLOS MEDICINE*, 4(6):1117–1128, JUN 2007.

[2] Sharon Ash, Corey McMillan, Delani Gunawardena, Brian Avants, Brianna Morgan, Alea Khan, Peachie Moore, James Gee, and Murray Grossman. Speech errors in progressive non-fluent aphasia. *BRAIN AND LANGUAGE*, 113(1):13–20, APR 2010.

[3] Sharon Ash, Peachie Moore, Luisa Vesely, Delani Gunawardena, Corey McMillan, Chivon Anderson, Brian Avants, and Murray Grossman. Non-fluent speech in frontotemporal lobar degeneration. *JOURNAL OF NEUROLINGUISTICS*, 22(4):370–383, JUL 2009.

[4] Manzar Ashtari, Brian Avants, Laura Cyckowski, Kelly L. Cervellione, David

Roofeh, Philip Cook, James Gee, Serge Sevy, and Sanjiv Kumra. Medial temporal structures and memory functions in adolescents with heavy cannabis use. *JOURNAL OF PSYCHIATRIC RESEARCH*, 45(8):1055–1066, AUG 2011.

[5] B Avants and J Gee. Continuous curve matching with scale-space curvature and extrema-based scale selection. In LD Griffin and M Lillholm, editors, *SCALE SPACE METHODS IN COMPUTER VISION, PROCEEDINGS*, volume 2695 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 798–813. British Machine Vis Assoc; Kings Coll London; IT Univ Copenhagen, 2003. 4th International Conference on Scale Space Methods in Computer Vision, ISLE SKYE, SCOTLAND, JUN 10-12, 2003.

[6] B Avants and J Gee. Formulation and evaluation of variational curve matching with prior constraints. In JC Gee, JBA Maintz, and MW Vannier, editors, *BIOMEDICAL IMAGE REGISTRATION*, volume 2717 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 21–30. Siemens Med Solut; Siemens Corp Res; Natl Lib Med; Univ Penn, Vice Provost Res, 2003. 2nd International Workshop on Biomedical Image Registration, PHILADELPHIA, PENNSYLVANIA, JUN 23-24, 2003.

[7] B Avants and J Gee. The shape operator for differential analysis of images. In C Taylor and JA Noble, editors, *INFORMATION PROCESSING IN MEDICAL IMAGING, PROCEEDINGS*, volume 2732 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 101–113. Philips Med Syst; Image Metr; iMorphics; Mirada Solut, 2003. 18th International Conference on Information Processing in Medical Imaging, ST MARTINS COLL, AMBLESIDE, ENGLAND, JUL 20-25, 2003.

[8] B Avants and J Gee. Symmetric geodesic shape averaging and shape interpolation. In M Sonka, IA Kakadiaris, and J Kybic, editors, *COMPUTER VISION AND MATHEMATICAL METHODS IN MEDICAL AND BIOMEDICAL IMAGE ANALYSIS*, volume 3117 of *Lecture Notes in Computer Science*, pages 99–110, 2004. Workshop on Computer Vision Approaches to Medical Image Analysis (CVAMIA)/Mathematical Methods in Biomedical Image Analysis (MMBIA) held in conjunction with the 8th ECCV, Prague, CZECH REPUBLIC, MAY 15, 2004.

[9] B. Avants, J. Gee, P. T. Schoenemann, J. Monge, J. E. Lewis, and R. L. Holloway. Validation of plaster endocast morphology through 3d ct image analysis. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, (38):56, 2004.

[10] B Avants, J Gee, PT Schoenemann, J Monge, JE Lewis, and RL Holloway. A new method for assessing endbcast morphology: calculating local curvature from 3d ct images. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, (40):67, 2005.

[11] B Avants and JC Gee. Geodesic estimation for large deformation anatomical shape averaging and interpolation. *NEUROIMAGE*, 23(1):S139–S150, 2004.

Conference on Mathermatics in Brain Imaging, Univ Calif Los Angeles, Inst Pure & Appl Math, Los Angeles, CA, JUL 12-23, 2004.

[12] B Avants, MR Grossman, and JC Gee. The correlation of cognitive decline with frontotemporal dementia induced annualized gray matter loss using diffeomorphic morphometry. *ALZHEIMER DISEASE & ASSOCIATED DISORDERS*, 19(1):S25–S28, OCT-DEC 2005. Satellite Meeting on Frontotemporal Dementia, Univ Penn, Philadelphia, PA, JUL 15-16, 2004.

[13] B Avants, D Soodak, and G Ruppeiner. Measuring the electrical conductivity of the earth. *AMERICAN JOURNAL OF PHYSICS*, 67(7):593–598, JUL 1999.

[14] B. B. Avants, C. L. Epstein, M. Grossman, and J. C. Gee. Symmetric diffeomorphic image registration with cross-correlation: Evaluating automated labeling of elderly and neurodegenerative brain. *MEDICAL IMAGE ANALYSIS*, 12(1):26–41, FEB 2008. 3rd International Workshop on Biomedical Image Registration, Utrecht Univ, Utrecht, NETHERLANDS, JUL 09-11, 2006.

[15] BB Avants, CL Epstein, and JC Gee. Geodesic image interpolation: Parameterizing and interpolating spatiotemporal images. In N Paragios, O Faugeras, T Chan, and C Schnorr, editors, *VARIATIONAL, GEOMETRIC, AND LEVEL SET METHODS IN COMPUTER VISION, PROCEEDINGS*, volume 3752 of *Lecture Notes in Computer Science*, pages 247–258, 2005. 3rd International Workshop on Variational, Geometric, and Level Set Methods in Computer Vision, Beijing, PEOPLES R CHINA, OCT 16, 2005.

[16] BB Avants and JP Williams. An adaptive minimal path generation technique for vessel tracking in cta/ce-mra volume images. In S Delp, AM DiGioia, and B Jaramaz, editors, *MEDICAL IMAGE COMPUTING AND COMPUTER-ASSISTED INTERVENTION - MICCAI 2000*, volume 1935 of *Lecture Notes in Computer Science*, pages 707–716, 2000. 3rd International Conference on Medical Image Computing and Computer-Assisted Intervention, PITTSBURGH, PA, OCT 11-14, 2000.

[17] Brian Avants, Chivon Anderson, Murray Grossman, and James C. Gee. Spatiotemporal normalization for longitudinal analysis of gray matter atrophy in frontotemporal dementia. *Med Image Comput Comput Assist Interv*, 10(Pt 2):303–310, 2007.

[18] Brian Avants, Philip A. Cook, Corey McMillan, Murray Grossman, Nicholas J. Tustison, Yuanjie Zheng, and James C. Gee. Sparse unbiased analysis of anatomical variance in longitudinal imaging. *Med Image Comput Comput Assist Interv*, 13(Pt 1):324–331, 2010.

[19] Brian Avants, Paramveer Dhillon, Benjamin M. Kandel, Philip A. Cook, Corey T. McMillan, Murray Grossman, and James C. Gee. Eigenanatomy improves detection power for longitudinal cortical change. *Med Image Comput Comput Assist Interv*, 15(Pt 3):206–213, 2012.

[20] Brian Avants, Jeffrey T. Duda, Junghoon Kim, Hui Zhang, John Pluta, James C. Gee, and John Whyte. Multivariate analysis of structural and diffusion imaging in traumatic brain injury. *ACADEMIC RADIOLOGY*, 15(11):1360–1375, NOV 2008.

[21] Brian Avants, Alea Khan, Leo McCluskey, Lauren Elman, and Murray Grossman. Longitudinal cortical atrophy in amyotrophic lateral sclerosis with frontotemporal dementia. *ARCHIVES OF NEUROLOGY*, 66(1):138–139, JAN 2009.

[22] Brian B. Avants, Philip A. Cook, Lyle Ungar, James C. Gee, and Murray Grossman. Dementia induces correlated reductions in white matter integrity and cortical thickness: A multivariate neuroimaging study with sparse canonical correlation analysis. *NEUROIMAGE*, 50(3):1004–1016, APR 15 2010.

[23] Brian B. Avants, C. L. Epstein, and J. C. Gee. Geodesic image normalization and temporal parameterization in the space of diffeomorphisms. In GZ Yang, T Jiang, DG Shen, L Gu, and J Yang, editors, *MEDICAL IMAGING AND AUGMENTED REALITY*, volume 4091 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 9–16, 2006. 3rd International Workshop on Medical Imaging and Augmented Reality (MIAR 2006), Shanghai, PEOPLES R CHINA, AUG 17-18, 2006.

[24] Brian B. Avants, Murray Grossman, and James C. Gee. Symmetric diffeomorphic image registration: Evaluating automated labeling of elderly and neurodegenerative cortex and frontal lobe. In JPW Pluim, B Likar, and FA Gerritsen, editors, *BIOMEDICAL IMAGE REGISTRATION, PROCEEDINGS*, volume 4057 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 50–57. Philips Med Syst, 2006. 3rd International Workshop on Biomedical Image Registration, Utrecht Univ, Utrecht, NETHERLANDS, JUL 09-11, 2006.

[25] Brian B. Avants, Hallam Hurt, Joan M. Giannetta, Charles L. Epstein, David M. Shera, Hengyi Rao, Jiongjiong Wang, and James C. Gee. Effects of heavy in utero cocaine exposure on adolescent caudate morphology. *PEDIATRIC NEUROLOGY*, 37(4):275–279, OCT 2007.

[26] Brian B. Avants, P. Thomas Schoenemann, and James C. Gee. Lagrangian frame diffeomorphic image registration: Morphometric comparison of human and chimpanzee cortex. *MEDICAL IMAGE ANALYSIS*, 10(3):397–412, JUN 2006. 2nd International Workshop on Biomedical Image Registration, Univ Penn, PHILADELPHIA, PA, JUN 23-24, 2003.

[27] Brian B. Avants, Nicholas J. Tustison, Gang Song, Philip A. Cook, Arno Klein, and James C. Gee. A reproducible evaluation of ants similarity metric performance in brain image registration. *NEUROIMAGE*, 54(3):2033–2044, FEB 1 2011.

[28] Brian B. Avants, Nicholas J. Tustison, Jue Wu, Philip A. Cook, and James C. Gee. An open source multivariate framework for n-tissue segmentation with evaluation on public data. *NEUROINFORMATICS*, 9(4):381–400, DEC 2011.

[29] Brian B. Avants, Paul Yushkevich, John Pluta, David Minkoff, Marc Korczykowski, John Detre, and James C. Gee. The optimal template effect in hippocampus studies of diseased populations. *NEUROIMAGE*, 49(3):2457–2466, FEB 1 2010.

[30] Alexandra Badea, Sally Gewalt, Brian B. Avants, James J. Cook, and G. Allan Johnson. Quantitative mouse brain phenotyping based on single and multispectral mr protocols. *NEUROIMAGE*, 63(3):1633–1645, NOV 15 2012.

[31] Ashley Boller, David Libon, Katya Rascovsky, Rachel Goldmann Gross, Michael Dreyfuss, Brian Avants, Lauren Massimo, Peachie Moore, Jessica Kitain, H. Coslett, Anjan Chatterjee, and Murray Grossman. Philadelphia brief assessment of cognition (pbac): A validated screening measure for dementia. *NEUROLOGY*, 76(9, 4):A511, MAR 1 2011. 63rd AAN Annual Meeting, Honolulu, HI, APR 09-16, 2011.

[32] Michael F. Bonner, Luisa Vesely, Catherine Price, Chivon Anderson, Lauren Richmond, Christine Farag, Brian Avants, and Murray Grossman. Reversal of the concreteness effect in semantic dementia. *COGNITIVE NEUROPSYCHOLOGY*, 26(6):568–579, 2009.

[33] P. A. Cook, B. B. Avants, C. T. McMillan, J. Powers, J. C. Gee, and M. Grossman. Multimodal neuroimaging reveals gray and white matter associations with verbal fluency in frontotemporal degeneration. *DEMENTIA AND GERIATRIC COGNITIVE DISORDERS*, 33(1):154–155, 2012. 8th International Conference on Frontotemporal Dementias, Manchester, ENGLAND, SEP 05-07, 2012.

[34] PA Cook, H Zhang, BB Avants, P Yushkevich, DC Alexander, JC Gee, O Ciccarelli, and AJ Thompson. An automated approach to connectivity-based partitioning of brain structures. In JS Duncan and G Gerig, editors, *MEDICAL IMAGE COMPUTING AND COMPUTER-ASSISTED INTERVENTION - MICCAI 2005, PT 1*, volume 3749 of *Lecture Notes in Computer Science*, pages 164–171. No Digital Inc Waterloo; Springer Lecture Notes Comp Sci; GE Healthcare; Medtron Navigat; Siemens Corp Res; NIBIB, 2005. 8th International Conference on Medical Image Computing and Computer-Assisted Intervention, Palm Springs, CA, OCT 26-29, 2005.

[35] Sandhitsu R. Das, Brian B. Avants, Murray Grossman, and James C. Gee. Registration based cortical thickness measurement. *NEUROIMAGE*, 45(3):867–879, APR 15 2009.

[36] Sandhitsu R. Das, Brian B. Avants, John Pluta, Hongzhi Wang, Jung W. Suh, Michael W. Weiner, Susanne G. Mueller, and Paul A. Yushkevich. Measuring longitudinal change in the hippocampal formation from in vivo high-resolution t2-weighted mri. *NEUROIMAGE*, 60(2):1266–1279, APR 2 2012.

[37] Sandhitsu R. Das, Dawn Mechanic-Hamilton, Marc Korczykowski, John Pluta, Simon Glynn, Brian B. Avants, John A. Detre, and Paul A. Yushkevich. Structure

specific analysis of the hippocampus in temporal lobe epilepsy. *HIPPOCAMPUS*, 19(6):517–525, 2009. 1st Computational Hippocampal Anatomy and Physiology Workshop, New York Univ, New York, NY, SEP 06, 2008.

[38] Sandhitsu R. Das, Dawn Mechanic-Hamilton, John Pluta, Marc Korczykowski, John A. Detre, and Paul A. Yushkevich. Heterogeneity of functional activation during memory encoding across hippocampal subfields in temporal lobe epilepsy. *Neuroimage*, 58(4):1121–1130, Oct 2011.

[39] Ritobrato Datta, Jongho Lee, Jeffrey Duda, Brian B. Avants, Charles H. Vite, Ben Tseng, James C. Gee, Gustavo D. Aguirre, and Geoffrey K. Aguirre. A digital atlas of the dog brain. *PLOS ONE*, 7(12), DEC 20 2012.

[40] A Dubb, R Gur, B Avants, and J Gee. Characterization of sexual dimorphism in the human corpus callosum. *NEUROIMAGE*, 20(1):512–519, SEP 2003.

[41] Yong Fan, Hengyi Rao, Hallam Hurt, Joan Giannetta, Marc Korczykowski, David Shera, Brian B. Avants, James C. Gee, Jiongjiong Wang, and Dinggang Shen. Multivariate examination of brain abnormality using both structural and functional mri. *NEUROIMAGE*, 36(4):1189–1199, JUL 15 2007.

[42] Christine Farag, Vanessa Troiani, Michael Bonner, Chivon Powers, Brian Avants, James Gee, and Murray Grossman. Hierarchical organization of scripts: Converging evidence from fmri and frontotemporal degeneration. *CEREBRAL CORTEX*, 20(10):2453–2463, OCT 2010.

[43] Satrajit S. Ghosh, Arno Klein, Brian Avants, and K. Jarrod Millman. Learning from open source software projects to improve scientific review. *FRONTIERS IN COMPUTATIONAL NEUROSCIENCE*, 6, APR 18 2012.

[44] Rachel G. Gross, Corey T. McMillan, Keerthi Chandrasekaran, Michael Dreyfuss, Sharon Ash, Brian Avants, Philip Cook, Peachie Moore, David J. Libon, Andrew Siderowf, and Murray Grossman. Sentence processing in lewy body spectrum disorder: The role of working memory. *BRAIN AND COGNITION*, 78(2):85–93, MAR 2012.

[45] M. Grossman, C. Anderson, A. Khan, B. Avants, L. Elman, and L. McCluskey. Impaired action knowledge in amyotrophic lateral sclerosis. *NEUROLOGY*, 71(18):1396–1401, OCT 28 2008.

[46] Murray Grossman, Chivon Anderson, Alea Khan, Brian Avants, Lauren Elman, and Leo McCluskey. Neural basis for impaired action knowledge in amyotrophic lateral sclerosis. *NEUROLOGY*, 70(11, 1):A248, MAR 11 2008. 6th Annual Meeting of the American-Academy-of-Neurology, Chicago, IL, APR 12-19, 2008.

[47] Murray Grossman, Paul J. Eslinger, Vanessa Troiani, Chivon Anderson, Brian Avants, James C. Gee, Corey McMillan, Lauren Massimo, Alea Khan, and Shweta Antani. The role of ventral medial prefrontal cortex in social decisions converging evidence from fmri and frontotemporal lobar degeneration. *NEUROPSYCHOLOGIA*, 48(12):3505–3512, OCT 2010.

[48] D. Gunawardena, S. Ash, C. McMillan, B. Avants, J. Gee, and M. Grossman. Why are patients with progressive nonfluent aphasia nonfluent? *NEUROLOGY*, 75(7):588–594, AUG 17 2010.

[49] Jamie L. Hanson, Moo K. Chung, Brian B. Avants, Karen D. Rudolph, Elizabeth A. Shirtcliff, James C. Gee, Richard J. Davidson, and Seth D. Pollak. Structural variations in prefrontal cortex mediate the relationship between early childhood stress and spatial working memory. *JOURNAL OF NEUROSCIENCE*, 32(23):7917–7925, JUN 6 2012.

[50] Jamie L. Hanson, Moo K. Chung, Brian B. Avants, Elizabeth A. Shirtcliff, James C. Gee, Richard J. Davidson, and Seth D. Pollak. Early stress is associated with alterations in the orbitofrontal cortex: A tensor-based morphometry investigation of brain structure and behavioral risk. *JOURNAL OF NEUROSCIENCE*, 30(22):7466–7472, JUN 2 2010.

[51] Jamie L. Hanson, Jung W. Suh, Brendon M. Nacewicz, Matthew J. Sutterer, Amelia A. Cayo, Diane E. Stodola, Cory A. Burghy, Hongzhi Wang, Brian B. Avants, Paul A. Yushkevich, Marilyn J. Essex, Seth D. Pollak, and Richard J. Davidson. Robust automated amygdala segmentation via multi-atlas diffeomorphic registration. *Front Neurosci*, 6:166, 2012.

[52] William D. Hopkins and Brian B. Avants. Regional and hemispheric variation in cortical thickness in chimpanzees (pan troglodytes). *JOURNAL OF NEUROSCIENCE*, 33(12):5241–5248, MAR 20 2013.

[53] Delanie R. Hurst, P. Thomas Schoenemann, Mackenzie M. Loyet, Brian B. Avants, and James C. Gee. How well does endocranial morphology predict behavioral differences in primates? *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, 147(54):171, 2012. 81st Annual Meeting of the American-Association-of-Physical-Anthropologists, Portland, OR, 2012.

[54] Varsha Jain, Jeffrey Duda, Brian Avants, Mariel Giannetta, Sharon X. Xie, Timothy Roberts, John A. Detre, Hallam Hurt, Felix W. Wehrli, and Danny J. J. Wang. Longitudinal reproducibility and accuracy of pseudo-continuous arterial spin-labeled perfusion mr imaging in typically developing children. *RADIOLOGY*, 263(2):527–536, MAY 2012.

[55] Benjamin M. Kandel, David Wolk, James C. Gee, and Brian Avants. Predicting cognitive data from medical images using sparse linear regression. *Inf. Process. Med. Imaging*, 2013.

[56] Junghoon Kim, Brian Avants, Sunil Patel, John Whyte, Branch H. Coslett, John Pluta, John A. Detre, and James C. Gee. Structural consequences of diffuse traumatic brain injury: A large deformation tensor-based morphometry study. *NEUROIMAGE*, 39(3):1014–1026, FEB 1 2008.

[57] Junghoon Kim, Brian Avants, John Whyte, and James C. Gee. Methodological considerations in longitudinal morphometry of traumatic brain injury. *FRONTIERS IN HUMAN NEUROSCIENCE*, 7, FEB 26 2013.

[58] Junghoon Kim, John Whyte, Sunil Patel, Brian Avants, Eduardo Europa, Jiongjiong Wang, John Slattery, James C. Gee, H. Branch Coslett, and John A. Detre. Resting cerebral blood flow alterations in chronic traumatic brain injury: An arterial spin labeling perfusion fmri study. *JOURNAL OF NEUROTRAUMA*, 27(8):1399–1411, AUG 2010.

[59] Arno Klein, Jesper Andersson, Babak A. Ardekani, John Ashburner, Brian Avants, Ming-Chang Chiang, Gary E. Christensen, D. Louis Collins, James Gee, Pierre Hellier, Joo Hyun Song, Mark Jenkinson, Claude Lepage, Daniel Rueckert, Paul Thompson, Tom Vercauteren, Roger P. Woods, J. John Mann, and Ramin V. Parsey. Evaluation of 14 nonlinear deformation algorithms applied to human brain mri registration. *NEUROIMAGE*, 46(3):786–802, JUL 1 2009.

[60] Arno Klein, Satrajit S. Ghosh, Brian Avants, B. T. T. Yeo, Bruce Fischl, Babak Ardekani, James C. Gee, J. J. Mann, and Ramin V. Parsey. Evaluation of volume-based and surface-based brain image registration methods. *NEUROIMAGE*, 51(1):214–220, MAY 15 2010.

[61] David J. Libon, Corey McMillan, Brian Avants, Ashley Boller, Brianna Morgan, Lisa Burkholder, Keerthi Chandrasekaran, Lauren Elman, Leo McCluskey, and Murray Grossman. Deficits in concept formation in amyotrophic lateral sclerosis. *NEUROPSYCHOLOGY*, 26(4):422–429, JUL 2012.

[62] Mackenzie M. Loyet, P. Thomas Schoenemann, Brian B. Avants, and James C. Gee. Associations between localized variation in brain anatomy and social behavior in healthy human subjects. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, 147(54):196, 2012. 81st Annual Meeting of the American-Association-of-Physical-Anthropologists, Portland, OR, 2012.

[63] Lauren Massimo, Chivon Powers, Peachie Moore, Luisa Vesely, Brian Avants, James Gee, David J. Libon, and Murray Grossman. Neuroanatomy of apathy and disinhibition in frontotemporal lobar degeneration. *DEMENTIA AND GERIATRIC COGNITIVE DISORDERS*, 27(1):96–104, 2009.

[64] Lauren M. Massimo, Chivon Anderson, Peachie Moore, Brian Avants, David Libon, Bala Cynwyd, and Murray Grossman. Neuroanatomical correlates of apathy and disinhibition in frontotemporal dementia. *NEUROLOGY*, 70(11, 1):A443, MAR 11 2008. 6th Annual Meeting of the American-Academy-of-Neurology, Chicago, IL, APR 12-19, 2008.

[65] Corey T. McMillan, Brian Avants, David J. Irwin, Jon B. Toledo, David A. Wolk, Vivianna M. Van Deerlin, Leslie M. Shaw, John Q. Trojanoswki, and Murray Grossman. Can mri screen for csf biomarkers in neurodegenerative disease? *NEUROLOGY*, 80(2):132–138, JAN 2013.

[66] Corey T. McMillan, David J. Irwin, Brian B. Avants, John Powers, Philip A. Cook, Jon B. Toledo, Elisabeth McCarty Wood, Vivianna M. Van Deerlin, Virginia M-Y. Lee, John Q. Trojanowski, and Murray Grossman. White matter imaging helps dissociate tau from tdp-43 in frontotemporal lobar degeneration. *J Neurol Neurosurg Psychiatry*, Mar 2013.

[67] Brianna Morgan, Rachel G. Gross, Robin Clark, Michael Dreyfuss, Ashley Boller, Emily Camp, Tsao-Wei Liang, Brian Avants, Corey T. McMillan, and Murray Grossman. Some is not enough: Quantifier comprehension in corticobasal syndrome and behavioral variant frontotemporal dementia. *NEUROPSYCHOLOGIA*, 49(13):3532–3541, NOV 2011.

[68] Keelin Murphy, Bram van Ginneken, Joseph M. Reinhardt, Sven Kabus, Kai Ding, Xiang Deng, Kunlin Cao, Kaifang Du, Gary E. Christensen, Vincent Garcia, Tom Vercauteren, Nicholas Ayache, Olivier Commowick, Gregoire Malandain, Ben Glocker, Nikos Paragios, Nassir Navab, Vladlena Gorbunova, Jon Sporring, Marleen de Bruijne, Xiao Han, Mattias P. Heinrich, Julia A. Schnabel, Mark Jenkinson, Cristian Lorenz, Marc Modat, Jamie R. McClelland, Sebastien Ourselin, Sascha E. A. Muenzing, Max A. Viergever, Dante De Nigris, D. Louis Collins, Tal Arbel, Marta Peroni, Rui Li, Gregory C. Sharp, Alexander Schmidt-Richberg, Jan Ehrhardt, Rene Werner, Dirk Smeets, Dirk Loeckx, Gang Song, Nicholas Tustison, Brian Avants, James C. Gee, Marius Staring, Stefan Klein, Berend C. Stoel, Martin Urschler, Manuel Werlberger, Jef Vandemeulebroucke, Simon Rit, David Sarrut, and Josien P. W. Pluim. Evaluation of registration methods on thoracic ct: The empire10 challenge. *IEEE TRANSACTIONS ON MEDICAL IMAGING*, 30(11):1901–1920, NOV 2011.

[69] Lydia Ng, Sayan D. Pathak, Chihchau Kuan, Christopher Lau, Hongwei Dong, Andrew Sodt, Chinh Dang, Brian Avants, Paul Yushkevich, James C. Gee, David Haynor, Ed Lein, Allan Jones, and Mike Hawrylycz. Neuroinformatics for genome-wide 3d gene expression mapping in the mouse brain. *IEEE-ACM TRANSACTIONS ON COMPUTATIONAL BIOLOGY AND BIOINFORMATICS*, 4(3):382–393, JUL-SEP 2007.

[70] John Pluta, Brian B. Avants, Simon Glynn, Sttyash Awate, James C. Gee, and John A. Detre. Appearance and incomplete label matching for diffeomorphic template based hippocampus segmentation. *HIPPOCAMPUS*, 19(6):565–571, 2009. 1st Computational Hippocampal Anatomy and Physiology Workshop, New York Univ, New York, NY, SEP 06, 2008.

[71] Hengyi Rao, Laura Betancourt, Joan M. Giannetta, Nancy L. Brodsky, Marc Korczykowski, Brian B. Avants, James C. Gee, Jiongjiong Wang, Hallam Hurt, John A. Detre, and Martha J. Farah. Early parental care is important for hippocampal maturation: Evidence from brain morphology in humans. *NEUROIMAGE*, 49(1):1144–1150, JAN 1 2010.

[72] Hengyi Rao, Jiongjiong Wang, Joan Giannetta, Marc Korczykowski, David Shera, Brian B. Avants, James Gee, John A. Detre, and Hallam Hurt. Altered resting cerebral blood flow in adolescents with in utero cocaine exposure revealed by perfusion functional mri. *PEDIATRICS*, 120(5):E1245–E1254, NOV 2007.

[73] Torsten Rohlfing and Brian Avants. "nonparametric local smoothing" is not image registration. *BMC Res Notes*, 5:610, 2012.

[74] P. T. Schoenemann, B. B. Avants, J. C. Gee, L. D. Glotzer, and M. J. Sheehan. Analysis of chimp-human brain differences via non-rigid deformation of 3d mr images. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, (38):174–175, 2004.

[75] P. T. Schoenemann, R. L. Holloway, B. B. Avants, and J. C. Gee. Endocast asymmetry in pongids assessed via non-rigid deformation analysis of high-resolution ct images. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, (46):188, 2008. 77th Annual Meeting of the American-Association-of-Physical-Anthropologists, Columbus, OH, APR 09-12, 2008.

[76] P. T. Schoenemann, R. L. Holloway, B. B. AvantS, and J. C. Gee. The role of micro-morphological stress markers in the differential diagnosis of infectious bone diseases. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, (46):188–189, 2008. 77th Annual Meeting of the American-Association-of-Physical-Anthropologists, Columbus, OH, APR 09-12, 2008.

[77] P. T. Schoenemann, J. Monge, B. B. Avants, and J. C. Gee. An atlas of modern human cranial morpbology constructed via non-rigid deformation analysis of high-resolution ct images. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, page 231, 2009. 78th Annual Meeting of the American-Association-of-Physical-Anthropologists, Chicago, IL, MAR 31-APR 03, 2009.

[78] P. T. Schoenemann, J. Monge, B. B. Avants, D. Glotzer, and J. C. Gee. Sex differences in cranial form assessed via non-rigid deformation analysis of high-resolution ct images. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, (44):209, 2007.

[79] P. Thomas Schoenemann, James Gee, Brian Avants, Ralph L. Holloway, Janet Monge, and Jason Lewis. Validation of plaster endocast morphology through 3d ct image analysis. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, 132(2):183–192, FEB 2007.

[80] P. Thomas Schoenemann, Ralph Holloway, Janet Monge, Brian Avants, and James Gee. Differences in endocranial shape between homo and pongids assessed through non-rigid deformation analysis of high-resolution ct images. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, 144(52):265–266, 2011. 80th Annual Meeting of the American-Association-of-Physical-Anthropologists, Minneapolis, MN, APR 11-16, 2011.

[81] P. Thomas Schoenemann, Janet Monge, Ralph L. Holloway, Brian B. Avants, and James C. Gee. Creating statistical atlases of modern primate endocranial morphology rising non-rigid deformation analysis of high-resolution ct images. *AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY*, (50):208–209, 2010. 79th Annual Meeting of the American-Association-of-Physical-Anthropologists, Albuquerque, NM, APR 14-17, 2010.

[82] Tony J. Simon, Zhongle Wu, Brian Avants, Hui Zhang, James C. Gee, and Glenn T. Stebbins. Atypical cortical connectivity and visuospatial cognitive im-

pairments are related in children with chromosome 22q11.2 deletion syndrome. *BEHAVIORAL AND BRAIN FUNCTIONS*, 4, JUN 17 2008.

[83] Tony J. Simon, Zhongle Wu, Brian Avants, Hui Zhang, James C. Gee, and Glenn T. Stebbins. Atypical cortical connectivity and visuospatial cognitive impairments are related in children with chromosome 22q11.2 deletion syndrome. *Behav Brain Funct*, 4:25, 2008.

[84] Zhuang Song, Nicholas Tustison, Brian Avants, and James C. Gee. Integrated graph cuts for brain mri segmentation. In R Larsen, M Nielsen, and J Sporring, editors, *MEDICAL IMAGE COMPUTING AND COMPUTER-ASSISTED INTERVENTION - MICCAI 2006, PT 2*, volume 4191 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 831–838. AstraZeneca; Ctr Clin & Basic Res; Claron; Elsevier; GE; Medtronic; No Digital Inc; Siemens Corp Res; Springer; Visiopharm, 2006. 9th International Conference on Computing and Computer-Assisted Intervention, Copenhagen, DENMARK, OCT 01-06, 2006.

[85] Zhuang Song, Nicholas Tustison, Brian Avants, and James C. Gee. Integrated graph cuts for brain mri segmentation. *Med Image Comput Comput Assist Interv*, 9(Pt 2):831–838, 2006.

[86] Hui Sun, Brian B. Avants, Alejandro F. Frangi, Federico Sukno, James C. Geel, and Paul A. Yushkevich. Cardiac medial modeling and time-course heart wall thickness analysis. *Med Image Comput Comput Assist Interv*, 11(Pt 2):766–773, 2008.

[87] TA Sundaram, BB Avants, and JC Gee. A dynamic model of average lung deformation using capacity-based reparameterization and shape averaging of lung mr images. In C Barillot, DR Haynor, and P Hellier, editors, *MEDICAL IMAGE COMPUTING AND COMPUTER-ASSISTED INTERVENTION - MICCAI 2004, PT 2, PROCEEDINGS*, volume 3217 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 1000–1007. IRISA; CNRS; Univ Rennes, 2004. 7th International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2004), St Malo, FRANCE, SEP 26-29, 2004.

[88] TA Sundaram, BB Avants, and JC Gee. Towards a dynamic model of pulmonary parenchymal deformation: Evaluation of methods for temporal reparameterization of lung data. In JS Duncan and G Gerig, editors, *MEDICAL IMAGE COMPUTING AND COMPUTER-ASSISTED INTERVENTION - MICCAI 2005, PT 2*, volume 3750 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 328–335. No Digital Inc Waterloo; Springer Lecture Notes Comp Sci; GE Healthcare; Medtron Navigat; Siemens Corp Res; NIBIB, 2005. 8th International Conference on Medical Image Computing and Computer-Assisted Intervention, Palm Springs, CA, OCT 26-29, 2005.

[89] Tessa A. Sundaram, Brian B. Avants, and James C. Gee. Towards a dynamic model of pulmonary parenchymal deformation: evaluation of methods for temporal reparameterization of lung data. *Med Image Comput Comput Assist Interv*, 8(Pt 2):328–335, 2005.

[90] Nicholas Tustison, Brian Avants, Philip Cook, Junghoon Kim, John Whyte, James Gee, Stephen Ahlers, and James Stone. Multivariate analysis of diffusion tensor imaging and cortical thickness maps in a traumatic brain injury (tbi) cohort using advanced normalization tools (ants). *JOURNAL OF NEUROTRAUMA*, 28(6):A111, JUN 2011. 29th Annual National Neurotrauma Symposium, Hollywood Beach, FL, JUL 10-13, 2011.

[91] Nicholas J. Tustison, Brian B. Avants, Philip A. Cook, Junghoon Kim, John Whyte, James C. Gee, and James R. Stone. Logical circularity in voxel-based analysis: Normalization strategy may induce statistical bias. *Hum Brain Mapp*, Nov 2012.

[92] Nicholas J. Tustison, Brian B. Avants, Philip A. Cook, Yuanjie Zheng, Alexander Egan, Paul A. Yushkevich, and James C. Gee. N4itk: Improved n3 bias correction. *IEEE TRANSACTIONS ON MEDICAL IMAGING*, 29(6):1310–1320, JUN 2010.

[93] Nicholas J. Tustison, Brian B. Avants, Lucia Flors, Talissa A. Altes, Eduard E. de lange, John P. Mugler, III, and James C. Gee. Ventilation-based segmentation of the lungs using hyperpolarized he-3 mri. *JOURNAL OF MAGNETIC RESONANCE IMAGING*, 34(4):831–841, OCT 2011.

[94] Nicholas J. Tustison, Brian B. Avants, and James C. Gee. Directly manipulated free-form deformation image registration. *IEEE TRANSACTIONS ON IMAGE PROCESSING*, 18(3):624–635, MAR 2009.

[95] Nicholas J. Tustison, Brian B. Avants, Marcelo Siqueira, and James C. Gee. Topological well-composedness and glamorous glue: A digital gluing algorithm for topologically constrained front propagation. *IEEE TRANSACTIONS ON IMAGE PROCESSING*, 20(6):1756–1761, JUN 2011.

[96] Nicholas J. Tustison, Brian B. Avants, Tessa A. Sundaram, Jeffrey T. Duda, and James C. Gee. A generalization of free-form deformation image registration within the itk finite element framework. In JPW Pluim, B Likar, and FA Gerritsen, editors, *BIOMEDICAL IMAGE REGISTRATION, PROCEEDINGS*, volume 4057 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 238–246. Philips Med Syst, 2006. 3rd International Workshop on Biomedical Image Registration, Utrecht Univ, Utrecht, NETHERLANDS, JUL 09-11, 2006.

[97] Danny J. J. Wang, Xiaoming Bi, Brian B. Avants, Tongbai Meng, Sven Zuehlsdorff, and John A. Detre. Estimation of perfusion and arterial transit time in myocardium using free-breathing myocardial arterial spin labeling with navigator-echo. *MAGNETIC RESONANCE IN MEDICINE*, 64(5):1289–1295, NOV 2010.

[98] Hongzhi Wang, Sandhitsu Das, John Pluta, Caryne Craige, Murat Altinay, Brian Avants, Michael Weiner, Susanne Mueller, and Paul Yushkevich. Standing on the shoulders of giants: improving medical image segmentation via bias correction. *Med Image Comput Comput Assist Interv*, 13(Pt 3):105–112, 2010.

[99] Hongzhi Wang, Sandhitsu R. Das, Jung Wook Suh, Murat Altinay, John Pluta, Caryne Craige, Brian Avants, Paul A. Yushkevich, and Alzheimers Dis Neuroimaging Initia. A learning-based wrapper method to correct systematic errors in automatic image segmentation: Consistently improved performance in hippocampus, cortex and brain segmentation. *NEUROIMAGE*, 55(3):968–985, APR 1 2011.

[100] Matthew J. Weber, John A. Detre, Sharon L. Thompson-Schill, and Brian B. Avants. Reproducibility of functional network metrics and network structure: A comparison of task-related bold, resting asl with bold contrast, and resting cerebral blood flow. *Cognitive, Affective, & Behavioral Neuroscience*, accepted, 2013.

[101] Paul A. Yushkevich, Brian B. Avants, Sandhitsu R. Das, John Pluta, Murat Altinay, Caryne Craige, and Alzheimer's Dis Neuroimaging Initi. Bias in estimation of hippocampal atrophy using deformation-based morphometry arises from asymmetric global normalization: An illustration in adni 3 t mri data. *NEUROIMAGE*, 50(2):434–445, APR 1 2010.

[102] Paul A. Yushkevich, Brian B. Avants, Lydia Ng, Michael Hawrylycz, Pablo D. Burstein, Hui Zhang, and James C. Gee. 3d mouse brain reconstruction from histology using a coarse-to-fine approach. In JPW Pluim, B Likar, and FA Gerritsen, editors, *BIOMEDICAL IMAGE REGISTRATION, PROCEEDINGS*, volume 4057 of *LECTURE NOTES IN COMPUTER SCIENCE*, pages 230–237. Philips Med Syst, 2006. 3rd International Workshop on Biomedical Image Registration, Utrecht Univ, Utrecht, NETHERLANDS, JUL 09-11, 2006.

[103] Paul A. Yushkevich, Brian B. Avants, John Pluta, Sandhitsu Das, David Minkoff, Dawn Mechanic-Hamilton, Simon Glynn, Stephen Pickup, Weixia Liu, James C. Gee, Murray Grossman, and John A. Detre. A high-resolution computational atlas of the human hippocampus from postmortem magnetic resonance imaging at 9.4 t. *NEUROIMAGE*, 44(2):385–398, JAN 15 2009.

[104] Paul A. Yushkevich, Brian B. Avants, John Pluta, David Minkoff, John A. Detre, Murray Grossman, and James C. Gee. Shape-based alignment of hippocampal subfields: evaluation in postmortem mri. *Med Image Comput Comput Assist Interv*, 11(Pt 1):510–517, 2008.

[105] Paul A. Yushkevich, Hongzhi Wang, John Pluta, Sandhitsu R. Das, Caryne Craige, Brian B. Avants, Michael W. Weiner, and Susanne Mueller. Nearly automatic segmentation of hippocampal subfields in in vivo focal t2-weighted mri. *NEUROIMAGE*, 53(4):1208–1224, DEC 2010.

[106] Hui Zhang, Brian B. Avants, Paul A. Yushkevich, John H. Woo, Sumei Wang, Leo F. McCluskey, Lauren B. Elman, Elias R. Melhem, and James C. Gee. Differences: An example study using amyotrophic lateral sclerosis. *IEEE TRANSACTIONS ON MEDICAL IMAGING*, 26(11):1585–1597, NOV 2007.

[107] Hui Zhang, Brian B. Avants, Paul A. Yushkevich, John H. Woo, Sumei Wang, Leo F. McCluskey, Lauren B. Elman, Elias R. Melhem, and James C. Gee.

High-dimensional spatial normalization of diffusion tensor images improves the detection of white matter differences: an example study using amyotrophic lateral sclerosis. *IEEE Trans Med Imaging*, 26(11):1585–1597, Nov 2007.