Brian Avants

Curriculum Vitae

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My H-index: 39 (link), Pubmed: (papers)

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

2014 Best paper award with Nicholas Tustison at STACOM 2014 challenge.
2013 Advanced Normalization Tools with R (ANTsR) wins BRATS 2013 Tumor Segmentation Challenge at MICCAI, Nagoya, Japan (with Nick Tustison).
2013 Advanced Normalization Tools (ANTs) finishes first in two of three segmentation categories at SATA challenge, MICCAI, Nagoya, Japan (with Nick Tustison).
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–present Grant Reviewer - Alzheimer's Association

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

2013–present Doctoral committee member for Efstathios D Gennatas

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

2013–present Collaboration with Dr. Yvette Sheline, Center for Neuromodulation in Depression and Stress (CNDS), in multiple modality and longitudinal analysis.

2013–present Collaboration with Dr. Ruben Gur, Brain-Behavior Laboratory (BBL), in big data analysis of normal adolescent development and early signs of neuropsychiatric disorders.

2013–present Collaboration with Dr. Lyle Ungar, analyzing the eigenspaces relating words, sentences and brain activity.

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

2006–present Collaboration with Dr. Martha Farah and Dr. Hallam Hurt (CHOP), understanding the effects of stress and poverty on brain development.

2006–present Collaboration with Dr. Murray Grossman, multiple modality biomarkers for frontotemporal lobar degeneration and related disorders.

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

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

2015 Invited to deliver two day ANTs tutorial at USC Center for Imaging Genetics, Los Angeles, June 2015

2015 "Large-scale, predictive analytics for M^3 pediatric neuroimaging", International Society for Magnetic Resonance in Medicine Meeting, Toronto, CN June 2015

2015 "ANTs and ANTsR", Two day tutorial with Nick Tustison, McGill University and Montreal Neurological Institute, Montreal, CN, May 2015

2015 Invited to deliver ANTs introduction talk at University of California, San Diego. San Diego, CA May 2015

2014 "Functional Imaging Analysis with R", University of South Carolina, Nov 2014

2014 "Big Image Registration", Frontiers in Human Brain Mapping Workshop, Princeton University, August 2014

2014 "Eigenwords & Eigenanatomy for Decoding Neural Representations of Semantics," HRL, Malibu, CA, April 2014

2014 "ANTs & Eigenanatomy for Integrative Brain Mapping ", University of Calgary, Calgary, Alberta Feb 2014

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

2013 "ANTs & Eigenanatomy", Neuroimaging Training Program, UCLA, Los Angeles, CA July 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

Current

The Imaging Genomics of Pediatric Executive Function, NIH, K01ES025432-01, 10/2014-9/2019 (Avants, Brian, PI), $275,000/annual direct costs, 80% effort (Big data training grant.)

Multimodal brain maturation indices modulating psychopathology and neurocognition, NIH, R01MH107235-01, 08/01/15 âĂŞ 05/31/18, (Avants, Brian, collaborator, Gur, Ruben, PI), $275,000/annual direct costs, 5% effort (via cost sharing with K01.)

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.)

Past

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

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)

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 Grant, University of Pennsylvania, Philadelphia, PA, 9/2002-6/2010 (Peter Davies, PI), (Role in grant: Trainee)

Media Coverage

2013 CNN article on collaboration with Marha Farah.

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, Julia, Python, 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*

Articles Under Review

1. Longitudinal eigenanatomy reveals white matter and gray matter measurements that relate to clinical decline in behavioral variant frontotemporal lobar degeneration (first author)
2. A reproducible analysis pipeline for population studies of ASL-based cerebral blood flow (last author)
3. TOT: Poverty and the baby brain (first author)
4. Joint Fusion for optimal template creation (last author)
5. Automated segmentation of chronic stroke lesions using LINDA: Lesion Identification with Neighborhood Data Analysis (last author)

Journal Publications

1. See these links for latest papers: Google scholar search and Pubmed search
2. Betancourt, L.; **Avants**, B. B.; Farah, M. J.; Brodsky, N. L.; Wu, Jue; Ashtari, M.; & Hurt, H., 'Effect of socioeconomic status (SES) disparity on neural development in female African-American infants at age 1 month', Developmental Science, *in press*.
3. **Avants**, B. B.; Hackman, D.; Betancourt, L.; Lawson, G. M.; Hurt, H.; Farah, M.J (2016), 'Re-

lation of Childhood Home Environment to Cortical Thickness in Late Adolescence: Specificity of Experience and Timing', PLOS One, *in press*.
4. **Avants**, B. B.; Johnson, H. J.; Tustison, N. J., (2015), 'Neuroinformatics and the The Insight ToolKit', Frontiers in neuroinformatics 9.
5. Pustina, D.; **Avants**, B. B.; Sperling, M.; Gorniak, R.; He, X.; Doucet, G.; Barnett, P.; Mintzer, S.; Sharan, A. & Tracy, J. (2015), 'Predicting the laterality of temporal lobe epilepsy from PET, MRI, and DTI: A multimodal study.' Neuroimage Clin, 9, 20–31.
6. **Avants**, B. B.; Duda, J. T.; Kilroy, E.; Krasileva, K.; Jann, K.; Kandel, B. T.; Tustison, N. J.; Yan, L.; Jog, M.; Smith, R.; Wang, Y.; Dapretto, M. & Wang, D. J. J. (2015), 'The pediatric template of brain perfusion.', Sci Data 2, 150003.
7. Wu, J.; Awate, S. P.; Licht, D. J.; Clouchoux, C.; du Plessis, A. J.; **Avants**, B. B.; Vossough, A.; Gee, J. C. & Limperopoulos, C. (2015), 'Assessment of MRI-Based Automated Fetal Cerebral Cortical Folding Measures in Prediction of Gestational Age in the Third Trimester.', AJNR Am J Neuroradiol 36(7), 1369–1374.
8. Isgum, I.; Benders, M. J. N. L.; **Avants**, B.; Cardoso, M. J.; Counsell, S. J.; Gomez, E. F.; Gui, L.; HÅšppi, P. S.; Kersbergen, K. J.; Makropoulos, A.; Melbourne, A.; Moeskops, P.; Mol, C. P.; Kuklisova-Murgasova, M.; Rueckert, D.; Schnabel, J. A.; Srhoj-Egekher, V.; Wu, J.; Wang, S.; de Vries, L. S. & Viergever, M. A. (2015), 'Evaluation of automatic neonatal brain segmentation algorithms: The NeoBrainS12 challenge.', Med Image Anal 20(1), 135–151.
9. Kandel, B. M.; Wang, D. J. J.; Detre, J. A.; Gee, J. C. & **Avants**, B. B. (2015), 'Decomposing cerebral blood flow MRI into functional and structural components: a non-local approach based on prediction.', Neuroimage 105, 156–170.
10. Kandel, B. M.; **Avants**, B. B.; Gee, J. C.; Arnold, S. E. & Wolk, D. A. (2015), 'Neuropsychological Testing Predicts Cerebrospinal Fluid Amyloid-β in Mild Cognitive Impairment.', J Alzheimers Dis 46(4), 901–912.
11. Kandel, B. M.; Wang, D. J. J.; Gee, J. C. & **Avants**, B. B. (2015), 'Eigenanatomy: sparse dimensionality reduction for multi-modal medical image analysis.', Methods 73, 43–53.
12. Adler, D. H.; Pluta, J.; Kadivar, S.; Craige, C.; Gee, J. C.; **Avants**, B. B. & Yushkevich, P. A. (2014), 'Histology-derived volumetric annotation of the human hippocampal subfields in postmortem MRI.', Neuroimage 84, 505–523.
13. **Avants**, B. B.; Tustison, N. J.; Stauffer, M.; Song, G.; Wu, B. & Gee, J. C. (2014), 'The Insight ToolKit image registration framework.', Front Neuroinform 8, 44.
14. **Avants**, B. B.; Libon, D. J.; Rascovsky, K.; Boller, A.; McMillan, C. T.; Massimo, L.; Coslett, H. B.; Chatterjee, A.; Gross, R. G. & Grossman, M. (2014), 'Sparse canonical correlation analysis relates network-level atrophy to multivariate cognitive measures in a neurodegenerative population.', Neuroimage 84, 698–711.
15. Cook, P. A.; McMillan, C. T.; **Avants**, B. B.; Peelle, J. E.; Gee, J. C. & Grossman, M. (2014), 'Relating brain anatomy and cognitive ability using a multivariate multimodal framework.', Neuroimage 99, 477–486.
16. Dhillon, P. S.; Wolk, D. A.; Das, S. R.; Ungar, L. H.; Gee, J. C. & **Avants**, B. B. (2014), 'Subject-specific functional parcellation via Prior Based Eigenanatomy.', Neuroimage 99, 14–27.
17. McMillan, C. T.; **Avants**, B. B.; Cook, P.; Ungar, L.; Trojanowski, J. Q. & Grossman, M. (2014), 'The power of neuroimaging biomarkers for screening frontotemporal dementia.', Hum. Brain Mapp. 35(9), 4827–4840.
18. McMillan, C. T.; Toledo, J. B.; **Avants**, B. B.; Cook, P. A.; Wood, E. M.; Suh, E.; Irwin, D. J.;

Powers, J.; Olm, C.; Elman, L.; McCluskey, L.; Schellenberg, G. D.; Lee, V. M.-Y.; Trojanowski, J. Q.; Van Deerlin, V. M. & Grossman, M. (2014), 'Genetic and neuroanatomic associations in sporadic frontotemporal lobar degeneration.', Neurobiol. Aging 35(6), 1473–1482.
19. Tustison, N. J.; Cook, P. A.; Klein, A.; Song, G.; Das, S. R.; Duda, J. T.; Kandel, B. M.; van Strien, N.; Stone, J. R.; Gee, J. C. & **Avants**, B. B. (2014), 'Large-scale evaluation of ANTs and FreeSurfer cortical thickness measurements.', Neuroimage 99, 166–179.
20. Hopkins, W. D. & **Avants**, B. B. (2013), 'Regional and Hemispheric Variation in Cortical Thickness in Chimpanzees (Pan troglodytes)', J. Neurosci. 33(12), 5241–5248.
21. Kim, J.; **Avants**, B.; Whyte, J. & Gee, J. C. (2013), 'Methodological considerations in longitudinal morphometry of traumatic brain injury.', Front Hum Neurosci 7, 52.
22. Lawson, G. M.; Duda, J. T.; **Avants**, B. B.; Wu, J. & Farah, M. J. (2013), 'Associations between children's socioeconomic status and prefrontal cortical thickness.', Dev Sci 16(5), 641–652.
23. McMillan, C. T.; **Avants**, B.; Irwin, D. J.; Toledo, J. B.; Wolk, D. A.; Van Deerlin, V. M.; Shaw, L. M.; Trojanoswki, J. Q. & Grossman, M. (2013), 'Can MRI screen for CSF biomarkers in neurodegenerative disease?', Neurology 80(2), 132–138.
24. McMillan, C. T.; Irwin, D. J.; **Avants**, B. B.; Powers, J.; Cook, P. A.; Toledo, J. B.; McCarty Wood, E.; Van Deerlin, V. M.; Lee, V. M.-Y.; Trojanowski, J. Q. & Grossman, M. (2013), 'White matter imaging helps dissociate tau from TDP-43 in frontotemporal lobar degeneration.', J. Neurol. Neurosurg. Psychiatry.
25. Tustison, N. J. & **Avants**, B. B. (2013), 'Explicit B-spline regularization in diffeomorphic image registration.', Front Neuroinform 7, 39.
26. Tustison, N. J.; Johnson, H. J.; Rohlfing, T.; Klein, A.; Ghosh, S. S.; Ibanez, L. & **Avants**, B. B. (2013), 'Instrumentation bias in the use and evaluation of scientific software: recommendations for reproducible practices in the computational sciences.', Front Neurosci 7, 162.
27. Weber, M. J.; Detre, J. A.; Thompson-Schill, S. L. & **Avants**, B. B. (2013), 'Reproducibility of functional network metrics and network structure: a comparison of task-related BOLD, resting ASL with BOLD contrast, and resting cerebral blood flow.', Cogn. Affect. Behav. Neurosci. 13(3), 627–640.
28. Badea, A.; Gewalt, S.; **Avants**, B. B.; Cook, J. J. & Johnson, G. A. (2012), 'Quantitative mouse brain phenotyping based on single and multispectral MR protocols', Neuroimage 63(3), 1633–1645.
29. Cook, P. A.; **Avants**, B. B.; McMillan, C. T.; Powers, J.; Gee, J. C. & Grossman, M. (2012), 'Multimodal neuroimaging reveals gray and white matter associations with verbal fluency in frontotemporal degeneration', Dement. Geriatr. Cogn. Disord. 33(1), 154–155.
30. Das, S. R.; **Avants**, B. B.; Pluta, J.; Wang, H.; Suh, J. W.; Weiner, M. W.; Mueller, S. G. & Yushkevich, P. A. (2012), 'Measuring longitudinal change in the hippocampal formation from in vivo high-resolution T2-weighted MRI', Neuroimage 60(2), 1266–1279.
31. Datta, R.; Lee, J.; Duda, J.; **Avants**, B. B.; Vite, C. H.; Tseng, B.; Gee, J. C.; Aguirre, G. D. & Aguirre, G. K. (2012), 'A Digital Atlas of the Dog Brain', PLOS ONE 7(12).
32. Ghosh, S. S.; Klein, A.; **Avants**, B. & Millman, K. J. (2012), 'Learning from open source software projects to improve scientific review.', Front Comput Neurosci 6, 18.
33. Gross, R. G.; McMillan, C. T.; Chandrasekaran, K.; Dreyfuss, M.; Ash, S.; **Avants**, B.; Cook, P.; Moore, P.; Libon, D. J.; Siderowf, A. & Grossman, M. (2012), 'Sentence processing in Lewy body spectrum disorder: The role of working memory', Brain Cogn. 78(2), 85–93.

34. Hanson, J. L.; Chung, M. K.; **Avants**, B. B.; Rudolph, K. D.; Shirtcliff, E. A.; Gee, J. C.; Davidson, R. J. & Pollak, S. D. (2012), 'Structural Variations in Prefrontal Cortex Mediate the Relationship between Early Childhood Stress and Spatial Working Memory', J. Neurosci. 32(23), 7917–7925.
35. Hanson, J. L.; Suh, J. W.; Nacewicz, B. M.; Sutterer, M. J.; Cayo, A. A.; Stodola, D. E.; Burghy, C. A.; Wang, H.; **Avants**, B. B.; Yushkevich, P. A.; Essex, M. J.; Pollak, S. D. & Davidson, R. J. (2012), 'Robust Automated Amygdala Segmentation via Multi-Atlas Diffeomorphic Registration.', Front Neurosci 6, 166.
36. Hurst, D. R.; Schoenemann, P. T.; Loyet, M. M.; **Avants**, B. B. & Gee, J. C. (2012), 'How well does endocranial morphology predict behavioral differences in primates?', Am. J. Phys. Anthropol. 147(54), 171.
37. Jain, V.; Duda, J.; **Avants**, B.; Giannetta, M.; Xie, S. X.; Roberts, T.; Detre, J. A.; Hurt, H.; Wehrli, F. W. & Wang, D. J. J. (2012), 'Longitudinal Reproducibility and Accuracy of Pseudo-Continuous Arterial Spin-labeled Perfusion MR Imaging in Typically Developing Children', Radiology 263(2), 527–536.
38. Libon, D. J.; McMillan, C.; **Avants**, B.; Boller, A.; Morgan, B.; Burkholder, L.; Chandrasekaran, K.; Elman, L.; McCluskey, L. & Grossman, M. (2012), 'Deficits in Concept Formation in Amyotrophic Lateral Sclerosis', Neuropsychology 26(4), 422–429.
39. Loyet, M. M.; Schoenemann, P. T.; **Avants**, B. B. & Gee, J. C. (2012), 'Associations between localized variation in brain anatomy and social behavior in healthy human subjects.', Am. J. Phys. Anthropol. 147(54), 196.
40. Rohlfing, T. & **Avants**, B. (2012), '"Nonparametric Local Smoothing" is not image registration.', BMC Res Notes 5, 610.
41. Tustison, N. J.; **Avants**, B. B.; Cook, P. A.; Kim, J.; Whyte, J.; Gee, J. C. & Stone, J. R. (2012), 'Logical circularity in voxel-based analysis: Normalization strategy may induce statistical bias.', Hum. Brain Mapp..
42. Ashtari, M.; **Avants**, B.; Cyckowski, L.; Cervellione, K. L.; Roofeh, D.; Cook, P.; Gee, J.; Sevy, S. & Kumra, S. (2011), 'Medial temporal structures and memory functions in adolescents with heavy cannabis use', J. Psychiatr. Res. 45(8), 1055–1066.
43. **Avants**, B. B.; Tustison, N. J.; Song, G.; Cook, P. A.; Klein, A. & Gee, J. C. (2011), 'A reproducible evaluation of ANTs similarity metric performance in brain image registration', Neuroimage 54(3), 2033–2044.
44. **Avants**, B. B.; Tustison, N. J.; Wu, J.; Cook, P. A. & Gee, J. C. (2011), 'An Open Source Multivariate Framework for n-Tissue Segmentation with Evaluation on Public Data', Neuroinformatics 9(4), 381–400.
45. Boller, A.; Libon, D.; Rascovsky, K.; Gross, R. G.; Dreyfuss, M.; **Avants**, B.; Massimo, L.; Moore, P.; Kitain, J.; Coslett, H.; Chatterjee, A. & Grossman, M. (2011), 'Philadelphia Brief Assessment of Cognition (PBAC): A Validated Screening Measure for Dementia', Neurology 76(9, 4), A511.
46. Das, S. R.; Mechanic-Hamilton, D.; Pluta, J.; Korczykowski, M.; Detre, J. A. & Yushkevich, P. A. (2011), 'Heterogeneity of functional activation during memory encoding across hippocampal subfields in temporal lobe epilepsy.', Neuroimage 58(4), 1121–1130.
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