Nick Tustison

Curriculum Vitae

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Education

2004 **D.Sc. Biomedical Engineering**, *Washington University in St. Louis*, St. Louis, MO.
Thesis: *Biventricular Myocardial Strains With Anatomical NURBS Models From Tagged MRI*

2000 **M.S. Biomedical Engineering**, *University of Virginia*, Charlottesville, VA.
Thesis: *Quantification Methods for Assessing Asthma in Hyperpolarized 3He Lung MRI Studies*

1998 **B.S. Applied Physics: Computer Science**, *Brigham Young University*, Provo, UT.

Professional Appointments

2010– **Assistant Professor**, *Department of Radiology and Medical Imaging*, University of Virginia, Charlottesville, VA.

2005–2010 **Senior Research Investigator**, *Department of Radiology*, University of Pennsylvania, Philadelphia, PA.

2004–2005 **Research Fellow**, *Department of Radiology*, University of Pennsylvania, Philadelphia, PA.

Awards

2010 **1st place**, *EMPIRE10 lung registration competition*, MICCAI Conference 2010.

2013 **1st place**, *BRATS2013 multimodal brain tumor segmentation competition*, MICCAI Conference 2013.

Academic Service

Program committees

2012–present **SPIE Medical Imaging**.

Editorships

2012–present **Frontiers Review Editorial Board**.

May 2013– **Frontiers in Neuroinformatics: Guest Editor**, *Neuroinformatics with the Insight ToolKit.*

Reviewer Duties

Academic Radiology
Annals of Biomedical Engineering
Computers in Biology and Medicine
Computers in Medical Imaging and Graphics
Focused Ultrasound Foundation ad hoc grant reviewer
Image and Vision Computing
International Journal of Pattern Recognition and Artificial Intelligence
IEEE Transactions on Medical Imaging
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Biomedical Engineering
Insight Journal
International Conf. on Medical Image Computing and Computer Assisted Intervention
International Journal of Biomedical Imaging
International Journal of Computer Vision
International Workshop on Medical Imaging and Augmented Reality
IEEE International Symposium on Biomedical Imaging: From Nano to Macro
Journal of Computed Tomography
Journal of Electronic Imaging
Journal of Magnetic Resonance Imaging
Journal of Neurotrauma
Journal of the Optical Society of America A
Magnetic Resonance in Medicine
Medical Physics
Medical Image Analysis
Neuroradiology
Respirology

Invited Talks

2012 **SPIE conference**, *Open source tools for medical image analysis*.

Computer skills

Languages C++, perl, bash, LaTeX, R

Tools and Libraries Advanced Normalization Tools (ANTs), Insight Toolkit (ITK), Visualization Toolkit (VTK), Paraview, git, Matlab, PBS/SGE qsub

Publications

Articles

Brian B. Avants, Nicholas J. Tustison, and James C. Gee. The insight toolkit image registration framework: 2013. *Frontiers in Neuroinformatics*, submitted.

N. J. Tustison, Philip A. Cook, Gang Song, Sandhitsu R. Das, Jeffrey T. Duda, Benjamin M. Kandel, Niels van Strien, James R. Stone, James C. Gee, and Brian B. Avants. Large-scale cortical thickness quantification with advanced normalization tools (ants). *NeuroImage*, submitted.

Nicholas J. Tustison and Brian B. Avants. Explicit B-spline regularization in diffeomorphic image registration. *Frontiers in Neuroinformatics*, submitted.

Nicholas J. Tustison, Benjamin Contrella, Talissa A. Altes, Brian B. Avants, Eduard E. de Lange, and John P. Mugler III. Voxel-based longitudinal analysis of pulmonary ventilation mri. *Journal of Magnetic Resonance Imaging*, submitted.

Nicholas J. Tustison, K. L. Shrinhidi, Max Wintermark, Christopher Durst, Jeffrey T. Duda, James C. Gee, Murray C. Grossman, and Brian B. Avants. Multivariate neuroimage analysis with ANTsR: Application to supervised brain tumor segmentation using random forests. *NeuroImage*, submitted.

Nicholas J Tustison, Hans J Johnson, Torsten Rohlfing, Arno Klein, Satrajit S Ghosh, Luis Ibanez, and Brian B Avants. Instrumentation bias in the use and evaluation of scientific software: recommendations for reproducible practices in the computational sciences. *Front Neurosci*, 7:162, 2013.

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.

Gang Song, Eduardo Mortani Barbosa, Jr, Nicholas Tustison, Warren B Gefter, Maryl Kreider, James C Gee, and Drew A Torigian. A comparative study of HRCT image metrics and PFT values for characterization of ILD and COPD. *Acad Radiol*, 19(7):857–64, Jul 2012.

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.

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, Grégoire 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, Sébastien 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, René 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 Trans Med Imaging*, 30(11):1901–20, Nov 2011.

Eduardo Mortani Barbosa, Jr, Gang Song, Nicholas Tustison, Maryl Kreider, James C Gee, Warren B Gefter, and Drew A Torigian. Computational analysis of thoracic multidetector row HRCT for segmentation and quantification of small airway air trapping and emphysema in obstructive pulmonary disease. *Acad Radiol*, 18(10):1258–69, Oct 2011.

Nicholas J Tustison, Brian B Avants, Lucia Flors, Talissa A Altes, Eduard E de Lange, John P Mugler, 3rd, and James C Gee. Ventilation-based segmentation of the lungs using hyperpolarized (3)he MRI. *J Magn Reson Imaging*, 34(4):831–41, Oct 2011.

Cuneyt Yilmaz, Nicholas J Tustison, D Merrill Dane, Priya Ravikumar, Masaya Takahashi, James C Gee, and Connie C W Hsia. Progressive adaptation in regional parenchyma mechanics following extensive lung resection assessed by functional computed tomography. *J Appl Physiol (1985)*, 111(4):1150–8, Oct 2011.

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 Trans Image Process*, 20(6):1756–61, Jun 2011.

Nicholas J Tustison, Tessa S Cook, Gang Song, and James C Gee. Pulmonary kinematics from image data: a review. *Acad Radiol*, 18(4):402–17, Apr 2011.

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):2033–44, Feb 2011.

Nicholas J Tustison, Suyash P Awate, Gang Song, Tessa S Cook, and James C Gee. Point set registration using Havrda-Charvat-Tsallis entropy measures. *IEEE Trans Med Imaging*, 30(2):451–60, Feb 2011.

Nicholas J Tustison, Talissa A Altes, Gang Song, Eduard E de Lange, John P Mugler, 3rd, and James C Gee. Feature analysis of hyperpolarized helium-3 pulmonary MRI: a study of asthmatics versus nonasthmatics. *Magn Reson Med*, 63(6):1448–55, Jun 2010.

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 Trans Med Imaging*, 29(6):1310–20, Jun 2010.

Nicholas J Tustison, Suyash P Awate, Jing Cai, Talissa A Altes, G Wilson Miller, Eduard E de Lange, John P Mugler, 3rd, and James C Gee. Pulmonary kinematics from tagged hyperpolarized helium-3 MRI. *J Magn Reson Imaging*, 31(5):1236–41, May 2010.

Nicholas J Tustison, Brian B Avants, and James C Gee. Directly manipulated free-form deformation image registration. *IEEE Trans Image Process*, 18(3):624–35, Mar 2009.

Marcelo Siqueira, Longin J. Latecki, Nicholas J. Tustison, J. Gallier, and James C. Gee. Topological repairing of 3d digital images. *Journal of Mathematical Imaging and Vision*, 30(3):249–274, March 2008.

N. J. Tustison and A. A. Amini. *Parametric and Geometric Deformable Models: An Application in Biomaterials and Medical Imagery*, volume 2, chapter Analysis of 4-D Cardiac MR Data with NURBS Deformable Models: Temporal Fitting Strategy and Nonrigid Registration. Springer, May 2007.

Nicholas J Tustison and Amir A Amini. Biventricular myocardial strains via nonrigid registration of anatomical NURBS model [corrected]. *IEEE Trans Med Imaging*, 25(1):94–112, Jan 2006.

Nicholas J Tustison, Victor G Dávila-Román, and Amir A Amini. Myocardial kinematics from tagged MRI based on a 4-D B-spline model. *IEEE Trans Biomed Eng*, 50(8):1038–40, Aug 2003.

K D Hagspiel, T A Altes, J P Mugler, 3rd, M J Spellman, Jr, J F Mata, N J Tustison, and J R Brookeman. MR virtual colonography using hyperpolarized (3)He as an endoluminal contrast agent: demonstration of feasibility. *Magn Reson Med*, 44(5):813–6, Nov 2000.

Book Chapters

N. J. Tustison and A. A. Amini. *Parametric and Geometric Deformable Models: An Application in Biomaterials and Medical Imagery*, volume 2, chapter Analysis of 4-D Cardiac MR Data

with NURBS Deformable Models: Temporal Fitting Strategy and Nonrigid Registration. Springer, May 2007.

Conference Publications

Nicholas J. Tustison, Max Wintermark, Christopher Durst, and Brian B. Avants. Ants and Árboles. In *Proceedings of NCI-MICCAI BRATS 2013*, pages 47–50, September 2013.

C. Durst, P. Raghavan, N. Tustison, J. Patrie, A. Cupino, W. Xin, and M. Wintermark. Multiparametric imaging model to accurately predict extent of invasion of high-grade gliomas. In *Proceedings of ASNR*, 2013.

N. J. Tustison, A. Muratore, B. Contrella, J. P. Mugler III, E. E. de Lange, and T. A. Altes. Voxelwise comparison of hyperpolarized he-3 and xe-129 lung ventilation mr imaging in cystic fibrosis. In *Proceedings of the* 21^{st} *Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2013.

Nicholas J. Tustison, Brian B. Avants, Philip A. Cook, James C. Gee, and James R. Stone. Statistical bias in optimized vbm, 2013.

Nicholas J. Tustison, Brian B. Avants, Philip A. Cook, Gang Song, Sandhitsu Das, Niels van Strien, James R. Stone, and James C. Gee. The ants cortical thickness processing pipeline, 2013.

Nicholas J. Tustison, Benjamin Contrella, Talissa A. Altes, Brian B. Avants, Eduard E. de Lange, and John P. Mugler. Longitudinal assessment of treatment effects on pulmonary ventilation using 1h/3he mri multivariate templates, 2013.

Brian B. Avants, Nicholas J. Tustison, Gang Song, Baohua Wu, Michael Stauffer, Matthew M. McCormick, Hans J. Johnson, and James C. Gee. A unified image registration framework for itk. In *Biomedical Image Registration: 5th International Workshop, WBIR 2012, Nashville, TN, USA, July 7-8, 2012. Proceedings*, volume 7359. Lecture Notes in Computer Science, 2012.

Benjamin Contrella, Nicholas J. Tustison, Talissa A. Altes, Brian B. Avants, John P. Mugler, and Eduard E. de Lange. 4-d segmentation and normalization of 3he mr images for intrasubject assessment of ventilated lung volumes, 2012.

Nicholas J. Tustison and Brian B. Avants. Diffeomorphic directly manipulated free-form deformation image registration via vector field flows. In Benoit M. Dawant, Gary E. Christensen, J. Michael Fitzpatrick, and Daniel Rueckert, editors, *WBIR*, volume 7359 of *Lecture Notes in Computer Science*, pages 31–39. Springer, 2012.

C. C. W. Hsia, C. Yilmaz, N. J. Tustison, D. M. Dane, P. Ravikumark, M. Takahashi, and J. C. Gee. Non-invasive measurement of regional mechanical strain and shear following extensive lung resection by high-resolution computed tomography (HRCT). In *Proceedings of the American Thoracic Society International Conference*, 2011.

N. J. Tustison, B. B. Avants, P. A. Cook, J. Kim, J. Whyte, J. C. Gee, S. Ahlers, and J. Stone. Multivariate analysis of diffusion tensor imaging and cortical thickness maps in a traumatic brain injury (TBI) cohort using Advanced Normalization Tools (ANTs). In *Proceedings of the 2011 annual meeting of the National Neurotrauma Society*, 2011.

N. J. Tustison, B. B. Avants, L. Flors, T. A. Altes, E. E. de Lange, J. P. Mugler III, and J. C. Gee. Segmentation of lung ventilation defects using hyperpolarized ^{3}he mri. In *Proceedings of the 2011 International Functional Pulmonary Imaging Workshop*, 2011.

N. J. Tustison, B. B. Avants, L. Flors, T. A. Altes, E. E. de Lange, J. P. Mugler III, and J. C. Gee. Ventilation-based segmentation of the lungs using hyperpolarized helium-3 mri. In *oint Meeting combining The 3rd meeting of the Japanese Society of Pulmonary Functional Imaging and 5th International Workshop for Pulmonary Functional Imaging*, 2011.

B. B. Avants, A. Klein, N. J. Tustison, J. Woo, and J. C. Gee. Evaluation of an open-access, automated brain extraction method on multi-site multi-disorder data. In *Proceedings of the* 16^{th} *Annual Meeting of the Organization for Human Brain Mapping (HBM)*, 2010.

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):324–31, 2010.

G. Song, N. J. Tustison, B. B. Avants, and J. C. Gee. Lung ct image registration using diffeomorphic transformation models. In *Proceedings of the Evaluation of Methods for Pulmonary Image Registration (EMPIRE) Grand Challenge organized by the 13th International Conference on Medical Image Computing and Computer Assisted Intervention*, 2010.

N. J. Tustison, T. A. Altes, G. W. Miller, E. E. de Lange, J. P. Mugler III, and J. C. Gee. Retrospective bias correction of hyperpolarized ^{3}he MRI of the lung. In *Proceedings of the* 18^{th} *Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2010.

N. J. Tustison, T. A. Altes, G. Song, E. E. de Lange, J. P. Mugler III, and J. C. Gee. Hyperpolarized ^{3}he image feature analysis in asthmatics. In *Proceedings of the* 18^{th} *Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2010.

N. J. Tustison, B. B. Avants, T. A. Altes, J. P. Mugler III, and J. C. Gee. Automatic segmentation of ventilation defects in hyperpolarized 3He MRI. In *Proceedings of the Annual Meeting of the Biomedical Engineering Society*, 2010.

N. J. Tustison, B. B. Avants, P. A. Cook, and J. C. Gee. N4itk: Improved n3 bias correction with robust b-spline approximation. In *Proceedings of the* 7^{th} *Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, 2010.

A. C. Wright, J. Yoder, N. Tustison, J. C. Gee, F. W. Wehrli, and D. M. Elliot. High-resolution MRI at 7T of local strains in the intervertebral disc. In *Proceedings of the* 18^{th} *Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2010.

T. S. Cook, E. Barbosa Jr., N. J. Tustison, G. Song, D. A. Torigian, C. Koo, W. Gefter, and J. C. Gee. Quantitation of pulmonary alveolar proteinosis, pre- and post-lavage: A feasibility study. In *Proceedings of the* 2^{nd} *World Congress of Thoracic Imaging and Diagnosis in Chest Disease*, 2009.

T. S. Cook, N. J. Tustison, G. Song, S. P. Awate, D. A. Torigian, W. Gefter, and J. C. Gee. Segmentation-based quantitation of pulmonary alveolar proteinoisis, pre- and post-lavage, using high-resolution computed tomography. In *Proceedings of the* 2^{nd} *International Workshop on Pulmonary Image Analysis*, 2009.

E. Barbosa Jr., G. Song, N. J. Tustison, D. A. Torigian, M. Kreider, C. Koo, W. Gefter, and J. C. Gee. Computational analysis of HRCT for characterization and differentiation of ILD and COPD. In *Proceedings of the* 2^{nd} *World Congress of Thoracic Imaging and Diagnosis in Chest Disease*, 2009.

G. Song, E. Barbosa Jr., N. J. Tustison, D. A. Torigian, M. Kreider, C. Koo, W. Gefter, and J. C. Gee. Computational analysis of HRCT images for characterization and differentiation of ILD and COPD. In *Proceedings of the* 6^{th} *Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, 2009.

G. Song, N. J. Tustison, E. Barbosa Jr., J. C. Gee, W. Gefter, M. Kreider, and D. A. Torigian. A comparative study of HRCT image metrics and PFT values for characterization of ILD and COPD. In *Proceedings of the* 2^{nd} *International Workshop on Pulmonary Image Analysis*, 2009.

N. J. Tustison, T. A. Altes, G. Song, J. P. Mugler III, E. E. de Lange, and J. C. Gee. Feature analysis of hyperpolarized helium-3 pulmonary MRI in asthmatics versus non-asthmatics. In *Proceedings of the* 2^{nd} *International Workshop on Pulmonary Image Analysis*, 2009.

N. J. Tustison, S. P. Awate, G. Song, T. S. Cook, and J. C. Gee. A new information-theoretic measure to control the robustness-sensitivity trade-off for dmffd point-set registration. In *Proceedings of the* 21^{st} *Biennial International Conference on Information Processing in Medical Imaging (IPMI)*, pages 215–226, 2009.

Nicholas J Tustison, Suyash P Awate, Gang Song, Tessa S Cook, and James C Gee. A new information-theoretic measure to control the robustness-sensitivity trade-off for DMFFD point-set registration. *Inf Process Med Imaging*, 21:215–26, 2009.

N. J. Tustison, S. P. Awate, J. Cai, T. A. Altes, G. W. Miller, E. E. de Lange, J. P. Mugler III, and J. C. Gee. Point-set registration of tagged he-3 images using a structurally-based jensen-shannon divergence measure within a deterministic-annealing framework. In *Proceedings of the* 5^{th} *Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, 2008.

N. J. Tustison, J. Cai, T. A. Altes, G. W. Miller, J. P. Mugler III, and J. C. Gee. Pulmonary kinematics from 3-d hyperpolarized helium-3 tagged magnetic resonance imaging. In *Proceedings of the* 16^{th} *Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2008.

N. J. Tustison, C. J. Kotzer, G. A. Logan, P. L. Podolin, T. A. Altes, A. P. Wright, G. Song, H. Zhao, A. Hackzu, M. S. Barnett, R. A. Panetteieri Jr., and J. C. Gee. Detection of elastase induced emphysema in free-breathing mice using micro computed tomography (ct). In *Proceedings of the Annual International Conference of the American Thoracic Society*, 2008.

Tessa Sundaram Cook, Nicholas Tustison, Jürgen Biederer, Ralf Tetzlaff, and James Gee. How do registration parameters affect quantitation of lung kinematics? *Med Image Comput Comput Assist Interv*, 10(Pt 1):817–24, 2007.

N. J. Tustison, T. A. Altes, J. C. Gee, J. Cai, E. E. de Lange, and J. P. Mugler III. Pulmonary kinematics from hyperpolarized helium-3 tagged magnetic resonance imaging. In *Proceedings of the* 4^{th} *Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, 2007.

N. J. Tustison, B. B. Avants, and J. C. Gee. Improved ffd b-spline image registration. In *Proceedings of the* 11^{th} *Biennial IEEE International Conference on Computer Vision (ICCV)*, 2007.

J. Chen, N. J. Tustison, and A. A. Amini. Accurate recovery of 4d left ventricular deformations using volumetric b-splines incorporating phase based displacement estimates. In

Proceedings of SPIE: Medical Imaging 2006: Physiology, Function, and Structure from Medical Images, 2006.

Z. Song, N. J. Tustison, B. B. Avants, and J. C. Gee. Adaptive graph cuts with tissue priors for brain MRI segmentation. In *roceedings of the* 3^{rd} *Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, 2006.

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):831–8, 2006.

N. J. Tustison, B. B. Avants, T. A. Sundaram, J. T. Duda, and J. C. Gee. A generalization of free-form deformation image registration within the ITK finite element framework. In *Proceedings of the* 3^{rd} *International Workshop on Biomedical Image Registration (WBIR)*, 2006.

Nicholas J. Tustison and James C. Gee. Generalized n-d C^k B-spline scattered data approximation with confidence values. In *Proceedings of the Third international conference on Medical Imaging and Augmented Reality*, Miar'06, pages 76–83, Berlin, Heidelberg, 2006. Springer-Verlag.

N. J. Tustison and A. A. Amini. Comparison of parallel and spiral tagged MR imaging geometries in estimation of 3D myocardial strains. In *Proceedings of SPIE: Medical Imaging 2005: Physiology, Function, and Structure from Medical Images*, 2005.

N. J. Tustison and A. A. Amini. Lagrangian and eulerian biventricular strains from anatomical nurbs models using tagged mri. In *Proceedings of SPIE: Medical Imaging 2005: Physiology, Function, and Structure from Medical Images*, 2005.

N. J. Tustison, D. Abendschein, and A. A. Amini. Biventricular myocardial kinematics based on tagged mri from anatomical nurbs models. In *Proceedings of the IEEE Computer Vision and Pattern Recognition (CVPR)*, 2004.

N. J. Tustison and A. A. Amini. Myocardial kinematics based on tagged mri from geometric deformable models. In *Proceedings of SPIE: Medical Imaging 2006: Physiology, Function, and Structure from Medical Images*, 2004.

B. Cooley, S. T. Acton, M. Salerno, J. R. Brookeman, N. J. Tustison, E. E. de Lange, and T. A. Altes. Automated scoring of hyperpolarized helium-3 MR lung ventilation images: Initial development and validation. In *Proceedings of the* 11^{th}*Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2002.

N. J. Tustison, D. Abendschein, V. G. Davila-Ramon, and A. A. Amini. Myocardial strain imaging with tagged mri. In *Proceedings of the* 16^{th} *International Conference on Pattern Recognition (ICPR)*, 2002.

N. J. Tustison and A. A. Amini. Tracking myocardial beads from SPAMM-MRI with a 4-D B-spline model. In *Proceedings of the* 2^{nd} *Joint EMBS/BMES Conference*, 2002.

N. J. Tustison, D. Yablonskiy, M. Conradi, and A. A. Amini. Deformable registration of 3HeMR and x-ray CT images of the lungs. In *Proceedings of the* 11^{th}*Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2002.

K. Qing, T. A. Altes, N. J. Tustison, J. F. Mata, G. W. Miller, E. E. de Lange, W. A. Tobias, G. D. Cates, and J. R. Brookeman. Acquisition of spatially-registered helium-3 and proton 3d image sets of the lung in less than 10 seconds using compressed sensing. In *Proceedings*

of the 19^{th} *Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2000.

M. J. Spellman, K. D. Hagspiel, T. A. Altes, J. P. Mugler III, J. F. Mata, N. J. Tustison, and J. R. Brookeman. MR virtual colonoscopy using hyperpolarized ^{3}he as an endoluminal contrast agent. In *Proceedings of the* 8^{th} *Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 1999.

Open Source Software

N. J. Tustison and B. B. Avants. The TVDMFFDVR algorithm. *Insight Journal*, 2012.

N. J. Tustison, P. A. Cook, B. B. Avants, and J. R. Stone. Simulated diffusion-weighted imaging for the ITK masses. *Insight Journal*, 2011.

N. J. Tustison, B. B. Avants, M. Siqueira, and J. C. Gee. Escher's ants as metaphor: Topological marching for the well-composed, genus zero crowd. *Insight Journal*, 2010.

B. B. Avants, N. J. Tustison, and G. Song. Advanced Normalization Tools v1.0. *Insight Journal*, 2009.

N. J. Tustison, S. P. Awate, and J. C. Gee. Information-theoretic directly manipulated free-form deformation labeled point-set registration. *Insight Journal*, 2009.

N. J. Tustison and J. C. Gee. Introducing Dice, Jaccard, and other label overlap measures to ITK. *Insight Journal*, 2009.

N. J. Tustison and J. C. Gee. N4ITK: Nick's N3 ITK implementation for MRI bias field correction. *Insight Journal*, 2009.

N. J. Tustison and J. C. Gee. Stochastic fractal dimension image. *Insight Journal*, 2009.

P. A. Yushkevich and N. J. Tustison. Gaussian interpolation. *Insight Journal*, 2009.

N. J. Tustison, S. P. Awate, and J. C. Gee. A novel information-theoretic point-set measure based on the Jensen-Havrda-Charvat-Tsallis divergence. *Insight Journal*, 2008.

N. J. Tustison and J. C. Gee. Image kernel convolution. *Insight Journal*, 2008.

N. J. Tustison and J. C. Gee. Run-length matrices for texture analysis. *Insight Journal*, 2008.

N. J. Tustison, P. A. Yushkevich, and J. C. Gee. Live-wire-ing the Insight Toolkit with intelligent scissors. *Insight Journal*, 2008.

N. J. Tustison, P. A. Yushkevich, Z. Song, and J. C. Gee. Graph cuts, caveat utilitor, and Euler's bridges of Konigsberg. *Insight Journal*, 2008.

N. J. Tustison, H. Zhang, G. Lehmann, P. A. Yushkevich, and J. C. Gee. Meeting Andy Warhol somewhere over the rainbow: RGB colormapping and ITK. *Insight Journal*, 2008.

N. J. Tustison, B. B. Avants, and J. C. Gee. Gridding graphic graticules. *Insight Journal*, 2007.

N. J. Tustison and J. C. Gee. Go-go Gabor gadgetry. *Insight Journal*, 2007.

N. J. Tustison, M. Siqueira, and J. C. Gee. Well-composedness and the topological repairing of 2-D and 3-D digital images. *Insight Journal*, 2007.

N. J. Tustison, M. Siqueira, and J. C. Gee. N-D linear time exact signed Euclidean distance transform. *Insight Journal*, 2006.

N. J. Tustison and J. C. Gee. N-D C^k B-spline scattered data approximation. *Insight Journal*, 2005.

References

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