

# Nicholas J. Tustison

University of Virginia  
Department of Radiology and Medical  
Imaging

- EDUCATION
- ◇ **University of Pennsylvania**, Philadelphia, PA.  
Post-doctoral fellowship, September 2005.
  - ◇ **Washington University in St. Louis**, St. Louis, MO.  
D.Sc. in Biomedical Engineering, August 2004.  
Thesis title: *Biventricular Myocardial Strains With Anatomical NURBS Models From Tagged MRI*.
  - ◇ **University of Virginia**, Charlottesville, VA.  
M.S. in Biomedical Engineering, May 2000.  
Thesis title: *Quantification Methods for Assessing Asthma in Hyperpolarized  $^3\text{He}$  Lung MRI Studies*.
  - ◇ **Brigham Young University**, Provo, UT.  
B.S. in Applied Physics: Computer Science Emphasis, April 1998.  
Minor: Mathematics
  - ◇ **Scholarships**
    - UVa School of Engineering merit award
    - UVa Biomedical Engineering merit award
    - BYU Trustees Scholarship (Full tuition+4 years)
- WORK EXPERIENCE
- ◇ **Assistant Professor**, Department of Radiology and Medical Imaging, University of Virginia (July 2010–present)
  - ◇ **Senior Research Investigator**, Penn Image Computing and Science Laboratory, Radiology Department, University of Pennsylvania (September 2005–July 2010)
  - ◇ **Research Fellow**, Penn Image Computing and Science Laboratory, Radiology Department, University of Pennsylvania (August 2004–September 2005)
  - ◇ **Research Assistant**, Cardiovascular Image Analysis Laboratory, Washington University in St. Louis (August 2000–August 2004)
  - ◇ **Research Assistant**, Radiology Department, University of Virginia Health Sciences Center (May 1998–June 2000)
  - ◇ **Teaching Assistant**, Physics Department, Brigham Young University (September 1996–May 1998)
  - ◇ **Teaching Assistant**, Math Department, Utah Valley State College (May 1996–May 1997)
- RESEARCH INTERESTS
- digital topology, image registration and segmentation, open source software, translational research
- SKILLS
- C/C++, Insight Toolkit, Paraview, perl, Visualization Toolkit, Matlab, R  
Fluent: Spanish
- AWARDS
- Won the MICCAI 2013 Challenge on Multimodal Brain Tumor Segmentation.
- PROGRAM COMMITTEES
- SPIE Medical Imaging 2012–

EDITORSHIPS	Frontiers Review Editorial Board May 2012–
REVIEWER DUTIES	<p>Academic Radiology</p> <p>Annals of Biomedical Engineering</p> <p>Computers in Biology and Medicine</p> <p>Focused Ultrasound Foundation ad hoc grant reviewer</p> <p>Image and Vision Computing</p> <p>International Journal of Pattern Recognition and Artificial Intelligence</p> <p>IEEE Transactions on Medical Imaging</p> <p>IEEE Transactions on Pattern Analysis and Machine Intelligence</p> <p>IEEE Transactions on Biomedical Engineering</p> <p>Insight Journal</p> <p>International Conference on Medical Image Computing and Computer Assisted Intervention</p> <p>International Journal of Biomedical Imaging</p> <p>International Journal of Computer Vision</p> <p>International Workshop on Medical Imaging and Augmented Reality</p> <p>IEEE International Symposium on Biomedical Imaging: From Nano to Macro</p> <p>Journal of Computed Tomography</p> <p>Journal of Electronic Imaging</p> <p>Journal of Magnetic Resonance Imaging</p> <p>Journal of Neurotrauma</p> <p>Journal of the Optical Society of America A</p> <p>Magnetic Resonance in Medicine</p> <p>Medical Physics</p> <p>Medical Image Analysis</p> <p>Neuroradiology</p> <p>Respirology</p>
RESEARCH	<p><b>Journal Manuscripts</b></p> <p>Tustison NJ and Avants BB: Explicit B-spline regularization in diffeomorphic image registration, <i>Frontiers in Neuroinformatics</i>, submitted.</p> <p>Tustison NJ, Cook PA, Song G, Das SR, Duda JR, Kandel BM, van Strien N, Stone JR, Gee JC, Avants BB: Large-scale cortical thickness quantification with Advanced Normalization Tools (ANTs), <i>NeuroImage</i>, submitted.</p> <p>Tustison NJ, Contrella B, Altes TA, Avants BB, de Lange EE, Mugler III JP: Voxel-based Longitudinal Analysis of Pulmonary Ventilation MRI, <i>Journal of Magnetic Resonance Imaging</i>, submitted.</p> <p>Tustison NJ, Avants BB, Cook PA, Kim J, Whyte J, Gee JC, Stone JR: Logical Circularity in Voxel-Based Analysis: normalization strategy may induce statistical bias, <i>Human Brain Mapping</i>, accepted.</p> <p>Tustison NJ, Johnson H, Rohlfing T, Klein A, Ghosh S, Ibanez L, Avants BB: Instrumentation bias in the use and evaluation of scientific software: Recommendations for reproducible practices in the computational sciences, <i>Frontiers in Neuroscience</i>, 7(162).</p>

- Song G, Barbosa JR EM, Tustison NJ, Geftter WB, Kreider M, Gee JC, Torigian DA: A Comparative Study of HRCT Image Metrics and PFT Values for Characterization of ILD and COPD, *Academic Radiology*, 19(7):857–64, July 2012.
- Yilmaz C, Tustison NJ, Dane DM, Ravikumar P, Takahashi M, Gee JC, Hsia CCW: Functional computed tomography: Progressive adaptation in regional mechanics following extensive lung resection, *Journal of Applied Physiology*, 111(4):1150–8, October 2011.
- Avants BB\*, Tustison NJ\*, Wu J, Cook PA, Gee JC: An Open Source Framework for  $n$ -Tissue Segmentation with Evaluation on Public Data, *Neuroinformatics*, 9(4):381–400, December 2011.
- \*Joint first authorship.
- Murphy K, van Ginneken B, Reinhardt JM, . . . , Tustison NJ, . . . , Pluim JPW: Evaluation of Registration Methods on Thoracic CT: The EMPIRE10 Challenge, *IEEE Transactions on Medical Imaging*, 30(11):1901–20, November 2011.
- Tustison NJ, Avants BB, Altes TA, de Lange EE, Mugler III JP, Gee JC: Ventilation-Based Segmentation of the Lungs Using Hyperpolarized  $^3\text{He}$  MRI, *Journal of Magnetic Resonance Imaging*, 34(4):831–841, October 2011.
- Barbosa Jr EM, Song G, Tustison N, Kreider M, Gee JC, Geftter W, Torigian DA: Computational Analysis of Thoracic Multidetector Row HRCT for Segmentation and Quantification of Small Airway Air Trapping and Emphysema in Obstructive Pulmonary Disease, *Academic Radiology*, 18(10):1258–1269, October 2011.
- Tustison NJ, Avants BB, Siqueira M, Gee JC: Topological Well-Composedness and Glamorous Glue: A Digital Gluing Algorithm for Topologically Constrained Level Set Segmentation, *IEEE Transactions on Image Processing*, 20(6):1756–1771, June 2011.
- Tustison NJ, Cook TS, Song G, Gee JC: Pulmonary Kinematics from Image Data—A Review, *Academic Radiology*, 18(4):402–417, April 2011.
- Tustison NJ, Awate SP, Song G, Cook TS, Gee JC: Point Set Registration Using Havrda-Charvat-Tsallis Entropy Measures. *IEEE Transactions on Medical Imaging*, 30(2):451–460, February 2011.
- Avants BB, Tustison NJ, Song G, Cook PA, Klein A, Gee JC: A Reproducible Evaluation of ANTs Similarity Metric Performance in Brain Image Registration, *Neuroimage*, 54(3):2033–2044, February 2011.
- Tustison NJ, Avants BB, Cook PA, Egan A, Zheng Y, Yushkevich PA, Gee JC: N4ITK: Improved N3 Bias Correction, *IEEE Transactions on Medical Imaging*, 29(6):1310–1320, June 2010.
- Tustison NJ, Altes TA, Song G, de Lange EE, Mugler III JP, Gee JC: Feature Analysis of Hyperpolarized Helium-3 Pulmonary MRI: A Study of Asthmatics versus Non-Asthmatics, *Magnetic Resonance in Medicine*, 63(6):1448–1455, June 2010.
- Tustison NJ, Awate SP, Cai J, Altes TA, Miller GW, de Lange EE, Mugler III JP, Gee JC: Pulmonary Kinematics from Tagged Hyperpolarized Helium-3 MRI, *Journal of Magnetic Resonance Imaging*, 31(5):1236–1241, May 2010.
- Tustison NJ, Avants BB, Gee JC: Directly manipulated free-form deformation image registration. *IEEE Transactions on Image Processing* 18(3):624–35, March 2009.
- Siqueira M, Latecki LJ, Tustison N, Gallier J, Gee J: Topological Repairing of 3D Digital Images. *Journal of Mathematical Imaging and Vision* 30(3):249–274, March 2008.
- Tustison NJ, Amini AA: Biventricular myocardial strains via nonrigid registration of anatomical NURBS model. *IEEE Transactions on Medical Imaging* 25(1):94–112, January 2006.

Tustison NJ, Amini AA: Myocardial kinematics from tagged MRI based on a 4-D B-spline model. *IEEE Transactions on Biomedical Engineering* 50(8):1038–1040, August 2003.

Hagspiel KD, Altes TA, Mugler III JP, Mata JF, Tustison NJ, Brookeman JR: MR virtual colonography using hyperpolarized  $^3\text{He}$  as an endoluminal contrast agent: demonstration of feasibility. *Magnetic Resonance in Medicine* 44(5):813, November 2000.

### Conference Proceedings

Tustison NJ, Wintermark M, Durst C, Avants BB. ANTs and Árboles. MICCAI 2013 Challenge on Multimodal Brain Tumor Segmentation: 47.

Durst C, Raghavan P, Tustison N, Patrie, J, Cupino A, Xin W, Wintermark M. Multiparametric Imaging Model to Accurately Predict Extent of Invasion of High-Grade Gliomas. ASNR Scientific Paper (Oral), 2013.

Tustison NJ, Muratore A, Contrella B, Mugler III JP, de Lange EE, and Altes TA: In *Proceedings of the 21<sup>st</sup> Voxelwise Comparison of Hyperpolarized He-3 and Xe-129 Lung Ventilation MR Imaging in Cystic Fibrosis. Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Salt Lake City, 2013.

Tustison NJ, Avants BB, Cook PA, Song G, Das S, van Strien N, Stone JR, Gee JC: The ANTs Cortical Thickness Processing Pipeline. In: *SPIE Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*. Orlando 2013.

Tustison NJ, Contrella B, Altes TA, Avants BB, de Lange EE, Mugler III JP: Longitudinal assessment of treatment effects on pulmonary ventilation using  $^1\text{H}/^3\text{He}$  MRI multivariate templates. In: *SPIE Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*. Orlando 2013.

Tustison NJ, Avants BB, Cook PA, Gee JC, Stone JR: Statistical Bias in Optimized VBM. In: *SPIE Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*. Orlando 2013.

Tustison NJ, Avants BB: Diffeomorphic Directly Manipulated Free-Form Deformation Image Registration via Vector Field Flows. In: *Proceedings of the Workshop on Biomedical Image Registration*. Nashville 2012.

Avants BB, Tustison NJ, Song G, Wu B, Stauffer M, McCormick MM, Johnson HJ, Gee JC, Insight Software Consortium: A Unified Image Registration Framework for ITK4. In: *Proceedings of the Workshop on Biomedical Image Registration*. Nashville 2012.

Contrella B, Tustison NJ, Altes TA, Avants BB, Mugler III JP, de Lange EE: 4D segmentation and normalization of  $^3\text{He}$  MR images for intra-subject assessment of ventilated lung volumes. In: *SPIE Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*. San Diego 2012.

Zheng Y, Keller B, Wang Y, Tustison N, Song G, Bakic PR, Maidment AD, Conant EF, Gee JC, Kontos D: A Fully-Automated Software Pipeline for Parenchymal Pattern Analysis in Digital Breast Images: Towards the Translation of Imaging Biomarkers in Routine Breast Cancer Risk Assessment. In: *The Quantitative Imaging Reading Room Showcase at RSNA 2011 Annual Meeting and Scientific Assembly*, Chicago 2011.

Tustison NJ, Avants BB, Cook P, Kim J, Whyte J, Gee JC, Ahlers S, Stone J: 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*, Fort Lauderdale, 2011.

Qing K, Altes TA, Tustison NJ, Mata JF, Miller GW, de Lange EE, Tobias WA, Cates GD, Brookeman JR, Mugler JP: 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<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Montreal, 2011.

Tustison NJ, Avants BB, Flors L, Altes TA, de Lange EE, Mugler II JP, Gee JC: Segmentation of Lung Ventilation Defects Using Hyperpolarized  $^3\text{He}$  MRI. In: *Proceedings of the 2011 International Functional Pulmonary Imaging Workshop*, Philadelphia, 2011.

Tustison NJ, Avants BB, Flors L, Altes TA, de Lange EE, Mugler II JP, Gee JC: Ventilation-Based Segmentation of the Lungs Using Hyperpolarized Helium-3 MRI. In: *Joint Meeting combining The 3rd meeting of the Japanese Society of Pulmonary Functional Imaging and 5th International Workshop for Pulmonary Functional Imaging*, Hyogo, 2011.

Hsia CCW, Yilmaz C, Tustison NJ, Dane DM, Ravikumark P, Takahashi M, Gee JC: 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*, Denver, 2011.

Song G, Tustison NJ, Avants BB, Gee JC: 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, Beijing, 2010.

Tustison NJ, Avants BB, Altes TA, Mugler II JP, Gee JC: Automatic Segmentation of Ventilation Defects in Hyperpolarized  $^3\text{He}$  MRI. In: *Proceedings of the Annual Meeting of the Biomedical Engineering Society*, Austin, 2010.

Avants B, Cook PA, McMillan C, Grossman M, Tustison NJ, Zheng Y, Gee JC: Sparse Unbiased Analysis of Anatomical Variance in Longitudinal Imaging. In: *Proceedings of the Medical Image Computing and Computer Assisted Intervention Society (MICCAI)*, Beijing, 2010.

Avants B, Klein A, Tustison N, Woo J, Gee J: Evaluation of an Open-Access, Automated Brain Extraction Method on Multi-Site Multi-Disorder Data. In: *Proceedings of the 16<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping (HBM)*, Barcelona, 2010.

Wright AC, Yoder J, Tustison N, Gee J, Wehrli FW, Elliot DM: High-Resolution MRI at 7T of Local Strains in the Intervertebral Disc. In: *Proceedings of the 18<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Stockholm, 2010.

Tustison NJ, Altes TA, Miller GW, de Lange EE, Mugler JP, Gee JC: Retrospective Bias Correction of Hyperpolarized  $^3\text{He}$  MRI of the Lung. In: *Proceedings of the 18<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Stockholm, 2010.

Tustison NJ, Altes TA, Song G, de Lange EE, Mugler JP, Gee JC: Hyperpolarized  $^3\text{He}$  Image Feature Analysis in Asthmatics. In: *Proceedings of the 18<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Stockholm, 2010.

Tustison NJ, Avants BB, Cook P, Gee J: N4ITK: Improved N3 Bias Correction with Robust B-Spline Approximation. In: *Proceedings of the 7<sup>th</sup> Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, Rotterdam, 2010.

Tustison NJ, Altes TA, Song G, Mugler JP, de Lange EE, Gee JC: Feature Analysis of Hyperpolarized Helium-3 Pulmonary MRI in Asthmatics versus Non-Asthmatics. In: *Proceedings of the 2<sup>nd</sup> International Workshop on Pulmonary Image Analysis*, London, 2009.

- Cook TS, Tustison NJ, Song G, Awate SP, Torigian DA, Geftter W, Gee JC: Segmentation-Based Quantitation of Pulmonary Alveolar Proteinosis, Pre- and Post-Lavage, Using High-Resolution Computed Tomography. In: *Proceedings of the 2<sup>nd</sup> International Workshop on Pulmonary Image Analysis*, London, 2009.
- Song G, Tustison NJ, Barbosa Jr E, Gee JC, Geftter W, Kreider M, Torigian DA: A Comparative Study of HRCT Image Metrics and PFT Values for Characterization of ILD and COPD. In: *Proceedings of the 2<sup>nd</sup> International Workshop on Pulmonary Image Analysis*, London, 2009.
- Tustison NJ, Awate SP, Song G, Cook T, Gee JC: A new information-theoretic measure to control the robustness-sensitivity trade-off for DMFFD point-set registration. In: *Proceedings of the 21<sup>st</sup> Biennial International Conference on Information Processing in Medical Imaging (IPMI)*, Williamsburg, 215–226, 2009.
- Cook T, Barbosa E, Tustison N, Song G, Torigian D, Koo C, Geftter W, Gee J: Quantitation of Pulmonary Alveolar Proteinosis, Pre- and Post-Lavage: A Feasibility Study. In: *Proceedings of the 2<sup>nd</sup> World Congress of Thoracic Imaging and Diagnosis in Chest Disease*, Valencia, 2009.
- Barbosa E, Song G, Tustison N, Torigian D, Kreider M, Koo C, Geftter W, Gee J: Computational Analysis of HRCT for characterization and differentiation of ILD and COPD. In: *Proceedings of the 2<sup>nd</sup> World Congress of Thoracic Imaging and Diagnosis in Chest Disease*, Valencia, 2009.
- Song G, Barbosa E, Tustison N, Torigian D, Kreider M, Koo C, Geftter W, Gee J: Computational Analysis of HRCT Images For Characterization and Differentiation of ILD and COPD. In: *Proceedings of the 6<sup>th</sup> Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, Boston, 2009.
- Tustison NJ, Kotzer CJ, Logan GA, Podolin PL, Altes TA, Wright AP, Song G, Zhao H, Haczku A, Barnette MS, Panettieri Jr RA, Gee JC: 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*, Toronto, 2008.
- Tustison NJ, Cai J, Altes TA, Miller GW, de Lange EE, Mugler JP, Gee JC: Pulmonary Kinematics From 3-D Hyperpolarized Helium-3 Tagged Magnetic Resonance Imaging. In: *Proceedings of the 16<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Toronto, 2008.
- Tustison N, Awate SP, Cai J, Altes T, Miller G, Lange E, Mugler J, Gee JC: 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<sup>th</sup> Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, pp. 772–775, Paris, 2008.
- Tustison NJ, Altes TA, Gee JC, Cai J, de Lange EE, Mugler III JP: Pulmonary Kinematics From Hyperpolarized Helium-3 Tagged Magnetic Resonance Imaging. In: *Proceedings of the 4<sup>th</sup> Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, pp. 368–371, Washington D.C., 2007.
- Cook TS, Tustison N, Biederer J, Tetzlaff R, Gee J: How do registration parameters affect quantitation of lung kinematics? In: *Proceedings of the 10<sup>th</sup> International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 10(Pt 1):817–24, 2007.
- Tustison NJ, Avants BB, Gee JC: Improved FFD B-Spline Image Registration. *Proceedings of the 11<sup>th</sup> Biennial IEEE International Conference on Computer Vision (ICCV)*, pp. 1–8, Rio de Janeiro, 2007.
- Tustison NJ, Gee, JC: Generalized  $n$ -D  $C^k$  B-spline scattered data approximation with confidence values. *Proceedings of the 3<sup>rd</sup> International Workshop on Medical Imaging and Augmented Reality (MIAR)*, pp. 76–83, Shanghai, 2006.

Tustison NJ, Avants BB, Sundaram TA, Duda JT, Gee JC: A Generalization of Free-Form Deformation Image Registration Within the ITK Finite Element Framework. *Proceedings of the 3<sup>rd</sup> International Workshop on Biomedical Image Registration (WBIR)*, pp. 238–246, Utrecht, 2006.

Song Z, Tustison NJ, Avants BB, Gee JC: Adaptive graph cuts with tissue priors for brain MRI segmentation. In: *Proceedings of the 3<sup>rd</sup> Annual IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI)*, pp. 762–765, Arlington, 2006.

Chen J, Tustison NJ, Amini AA: 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*, 6143, San Diego, 2006.

Tustison NJ, Amini AA: 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*, 5746:571–579, San Diego, 2005.

Tustison NJ, Amini AA: Lagrangian and Eulerian biventricular strains from anatomical NURBS models using tagged MRI. In: *Proceedings of SPIE: Medical Imaging 2006: Physiology, Function, and Structure from Medical Images*, 5746:192–204, San Diego, 2005.

Tustison NJ, Abendschein D, Amini AA: Biventricular myocardial kinematics based on tagged MRI from anatomical NURBS models. In: *Proceedings of the IEEE Computer Vision and Pattern Recognition (CVPR)*, 2:514, Quebec City, 2004.

Tustison NJ, Amini AA: Myocardial Kinematics Based on Tagged MRI From Geometric Deformable Models. *Proceedings of SPIE: Medical Imaging 2006: Physiology, Function, and Structure from Medical Images*, 5369:22–33, San Diego, 2004.

Tustison NJ, Amini AA: Tracking Myocardial Beads from SPAMM-MRI with a 4-D B-Spline Model. In: *Proceedings of the 2<sup>nd</sup> Joint EMBS/BMES Conference*, pp. 993–994, Houston, 2002.

Tustison NJ, Abendschein D, Davila-Roman VG, Amini AA: Myocardial Strain Imaging with Tagged MRI. In: *Proceedings of the 16<sup>th</sup> International Conference on Pattern Recognition (ICPR)*, 1:723–726, Quebec City, 2002.

Cooley B, Acton ST, Salerno M, Brookeman JR, Tustison NJ, de Lange EE, Altes TA: Automated Scoring of Hyperpolarized Helium-3 MR Lung Ventilation Images: Initial Development and Validation. In: *Proceedings of the 11<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Honolulu, 2002.

Tustison NJ, Yablonskiy D, Conradi M, Amini AA: Deformable Registration of 3HeMR and X-ray CT images of the lungs. In: *Proceedings of the 11<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Honolulu, 2002.

Spellman MJ, Hagspiel KD, Altes TA, Mugler III JP, Mata JF, Tustison NJ, Brookeman JR: MR Virtual Colonoscopy using Hyperpolarized <sup>3</sup>He as an Endoluminal Contrast Agent. In: *Proceedings of the 8<sup>th</sup> Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM)*, Philadelphia, 1999.

## Book Chapters

Tustison NJ, Amini AA: Analysis of 4-D Cardiac MR Data with NURBS Deformable Models: Temporal Fitting Strategy and Nonrigid Registration. Parametric and Geometric Deformable Models: An Application in Biomaterials and Medical Imagery. Jasjit S. Suri and Aly Farag (eds.). Springer Publishers, II, May 2007.

## Invited Talks

Stone JR, Tustison NJ: Understanding the Inside of the Black Box: Optimizing Approaches for the Analysis of Diffusion Tensor Imaging and Cortical Maps in TBI, *Keystone Symposia on Molecular and Cellular Biology*. Keystone 2012.

Tustison NJ: Open Source Software Tools for Lung Image Analysis, *SPIE Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*. San Diego 2012.

### Other Articles

Tustison NJ: RGB Colormapping and ITK. *The Source: Kitware's Software Developer Quarterly*, January 2009, [http://www.kitware.com/products/archive/kitware\\_quarterly\\_0709.pdf](http://www.kitware.com/products/archive/kitware_quarterly_0709.pdf).

Tustison NJ: N4ITK: Nick's N3 ITK Implementation for MRI Bias Field Correction. *The Source: Kitware's Software Developer Quarterly*, January 2010, [http://www.kitware.com/products/archive/kitware\\_quarterly0110.pdf](http://www.kitware.com/products/archive/kitware_quarterly0110.pdf).

### Open Source Software

Tustison NJ, Avants BB: The TVDMFFDVR Algorithm, *Insight Journal* 2012, <http://hdl.handle.net/10380/3334>.

Tustison NJ, Cook PA, Avants BB, Stone JR: Simulated Diffusion-Weighted Imaging for the ITK Masses, *Insight Journal* 2011, <http://hdl.handle.net/10380/3315>.

Tustison NJ, Avants BB, Siqueira M, Gee JC: Escher's Ants as Metaphor: Topological Marching for the Well-Composed, Genus Zero Crowd, *Insight Journal* 2010, <http://hdl.handle.net/10380/3234>.

Tustison NJ, Gee JC: Introducing Dice, Jaccard, and Other Label Overlap Measures To ITK, *Insight Journal* 2009, <http://hdl.handle.net/10380/3141>.

Tustison NJ, Gee JC: Introducing Dice, Jaccard, and Other Label Overlap Measures To ITK, *Insight Journal* 2009, <http://hdl.handle.net/10380/3141>.

Yushkevich PA, Tustison NJ, Gee JC: Gaussian Interpolation, *Insight Journal* 2009, <http://hdl.handle.net/10380/3139>.

Avants BB, Tustison NJ, Song G: Advanced Normalization Tools v1.0, *Insight Journal* 2009, <http://hdl.handle.net/10380/3113>.

Tustison NJ, Gee JC: N4ITK: Nick's N3 ITK Implementation for MRI Bias Field Correction, *Insight Journal* 2009, <http://hdl.handle.net/10380/3053>, Publication of the Month December 2009.

Tustison NJ, Gee JC: Stochastic Fractal Dimension Image, *Insight Journal* 2009, <http://hdl.handle.net/1926/1525> (*accepted into the Insight Toolkit*), Publication of the Month April 2009.

Tustison NJ, Awate SP, Gee JC: Information-Theoretic Directly Manipulated Free-Form Deformation Labeled Point-Set Registration, *Insight Journal* 2009, <http://hdl.handle.net/1926/1524>.

Tustison NJ, Yushkevich P, Gee JC: Live-Wire-ing the Insight Toolkit with Intelligent Scissors, *Insight Journal* 2008, <http://hdl.handle.net/1926/1372>.

Tustison NJ, Zhang H, Lehmann G, Yushkevich P, Gee JC: Meeting Andy Warhol Somewhere Over the Rainbow: RGB Colormapping and ITK, *Insight Journal* 2008, <http://hdl.handle.net/1926/1452> (*accepted into the Insight Toolkit*).

Tustison NJ, Gee JC: Image Kernel Convolution, *Insight Journal* 2008, <http://hdl.handle.net/1926/1323> (*accepted into the Insight Toolkit*).

Tustison NJ, Yushkevich P, Song Z, Gee JC: Graph Cuts, Caveat Utilitor, and Euler's Bridges of Königsberg, *Insight Journal* 2008, <http://hdl.handle.net/1926/1503>, Publication of the Month December 2008.



Tustison NJ, Gee JC, Run-Length Matrices For Texture Analysis, *Insight Journal* 2008, <http://hdl.handle.net/1926/1374>.

Tustison NJ, Awate SP, Gee JC: A Novel Information-Theoretic Point-Set Measure Based on the Jensen-Havrda-Charvat-Tsallis Divergence, *Insight Journal* 2008, <http://hdl.handle.net/1926/1497>.

Tustison NJ, Siqueira M, Gee JC: Well-Composedness and the Topological Repairing of 2-D and 3-D Digital Images, *Insight Journal* 2007, <http://hdl.handle.net/1926/470>.

Tustison NJ, Gee JC: Go-Go Gabor Gadgetry, *Insight Journal* 2007, <http://hdl.handle.net/1926/500> (*accepted into the Insight Toolkit*).

Tustison NJ, Avants BB, Gee JC: Gridding Graphic Graticules, *Insight Journal* 2007, <http://hdl.handle.net/1926/475> (*accepted into the Insight Toolkit*).

Tustison NJ, Siqueira M, Gee JC:  $N$ -D linear time exact signed Euclidean distance transform. *Insight Journal* 2006, <http://hdl.handle.net/1926/171> (*accepted into the Insight Toolkit*).

Tustison NJ, Gee JC:  $N$ -D  $C^k$  B-Spline Scattered Data Approximation, *Insight Journal* 2005, <http://hdl.handle.net/1926/140> (*accepted into the Insight Toolkit*).

- REFERENCES
- Dr. James C. Gee  
Associate Professor of Radiologic Science in Radiology  
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- Dr. James R. Brookeman  
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