# CURRICULUM VITAE

**NICHOLAS J. TUSTISON**

1. **PERSONAL DATA**

Associate Professor

Department of Radiology and Medical Imaging

1. **EDUCATION**

D.Sc. Biomedical Engineering Washington University in St. Louis 2004

M.S. Biomedical Engineering University of Virginia 2000

B.S. Applied Physics:

Computer Science emphasis Brigham Young University 1998

1. **POST-GRADUATE EDUCATION**

Post-doctoral fellowship University of Pennsylvania 2005

1. **ACADEMIC APPOINTMENTS**

Associate Professor University of Virginia 2017

Visiting Associate Researcher University of California, Irvine 2017

Visiting Assistant Researcher University of California, Irvine 2016

Assistant Professor University of Virginia 2010

1. **OTHER EMPLOYMENT PERTAINING TO CURRENT PROFESSIONAL APPOINTMENTS**

Staff Scientist University of Pennsylvania 2006

1. **HONORS AND AWARDS**

Best paper award, STACOM cardiac motion estimation challenge, MICCAI Conference 2014

1st place, BraTS multimodal brain tumor segmentation competition, MICCAI Conference 2013

1st place, EMPIRE lung registration competition, MICCAI Conference 2010

1. **RESEARCH ACTIVITIES**
   1. **Areas of Research Interest**

I am a data scientist specializing in medical image analysis with technical expertise and international recognition in the development of high-quality, open-source computational strategies for clinically oriented research. My interests are focused on algorithmic and methodological innovation particularly with respect to medical imaging data which target a variety of applications including neuroscience, pulmonary, and cardiac research avenues.

* 1. **Current Projects**

**Deep Learning in Medical Imaging**

**Traumatic Brain Injury**

* 1. **Research Collaboration/Team Science**

*Advanced Normalization Tools.*ANTs is a systematic framework for quantitative biological image analysis built on the Insight ToolKit.  ANTs was first created by Brian Avants and I as a way to rapidly disseminate our latest research to the community of scientists who depend on imaging analytics and to allow them to study different organ systems, species or modalities with the same sound foundation.  While originally focused on diffeomorphic image registration, ANTs grew to incorporate methods for segmentation, feature extraction and, more recently, full statistical pipelines via ANTsR.

1. **TEACHING ACTIVITIES**

**ANTsX tutorials**

**ANTsX ecosystem online support**

As one of the two primary developers of the Advanced Normalization Tools (ANTs, originating at sourceforge.net on 2008-06-26 and now residing at <http://stnava.github.io/ANTs/>), I provide online support, assistance, and online workable examples for our large user base. ANTs is a systematic framework for quantitative biological image analysis built on the Insight ToolKit.  ANTs was first created by Brian Avants and I as a way to rapidly disseminate our latest research to the community of scientists who depend on imaging analytics and to allow them to study different organ systems, species or modalities with the same sound foundation.  While originally focused on diffeomorphic image registration, ANTs grew to incorporate methods for segmentation, feature extraction and, more recently, full statistical pipelines via ANTsR.  We have augmented these tools with deep learning functionality through ANTsPyNet and ANTsRNet.

1. **OTHER PROFESSIONAL ACTIVITIES (BOARDS, EDITORSHIPS, ETC.)**

Insight Software Consortium Council (Secretary) 2018

Frontiers Topic Editor: *Neuroinformatics with the Insight Toolkit* 2014-2015

SPIE Medical Imaging Conference Program Committee 2012-2023

Frontiers in Neuroinformatics Review Editorial Board 2012

Developer, Insight Toolkit, National Library of Medicine 2008

**Manuscript reviews** (average >1 per month)**:**

* Academic Radiology
* American Journal of Neuroradiology
* Annals of Biomedical Engineering
* Artificial Intelligence in Medicine
* Biomedical Signal Processing and Control
* Computers in Biology and Medicine
* Computerized Medical Imaging and Graphics
* Focused Ultrasound Foundation ad hoc grant reviewer
* Human Brain Mapping
* Image and Vision Computing
* International Journal of Pattern Recognition and Artificial Intelligence
* IEEE Transactions on Cybernetics
* IEEE Transactions on Medical Imaging
* IEEE Transactions on Pattern Analysis and Machine Intelligence
* IEEE Transactions on Biomedical Engineering
* Insight Journal
* 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
* 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
* Neurobiology of Aging
* NeuroImage
* NeuroImage: Clinical
* Neuroradiology
* PLOS ONE
* Respirology
* SIAM Journal on Imaging Sciences

1. **FINANCIAL RESOURCES (GRANTS AND CONTRACTS)**

# Federal

***i. Active***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Site PI | Advanced Normalization Tools | NIH/Univ. of Pennsylvania | 9/30/2022-6/30/2027 | $1,229,894 |
| Co-I | Methods for integrative analysis of modern data sources to advance understanding of Alzheimer’s Disease | NIH/Univ. of Pennsylvania | 2/15/2022-1/31/2024 | $43,513 |
| Co-I | Interpretable, subject specific-mapping of neurological health in the performance setting | DOD/ONR | 4/1/2023-3/31/2025 | $537,190 |
| Co-I | Personalized Profiles of Pathology in Pediatric Traumatic Brain Injury | NIH/Univ. of Utah | 1/1/2022-9/30/2026 | $565,250 |
| Co-I | Elucidating the role of increased neuroinflammation and related structural and functional neurological sequelae after exposure to repetitive blast | CDMRP | 9/30/2022-9/29/2026 | $3,400,000 |
| Co-I | Developing a model of brain and systemic physiological changes in experienced artillery service members | NMRC/Medical Technology Enterprise | 7/1/2020-8/25/2023 | $3,314,771 |
| Co-I | Individualized medicine in a gyrencephalic model of TBI polytrauma through the continuum of care | DOD/Henry Jackson Foundation | 4/1/2019-8/31/2022 | $1,541,000 |
| Co-I | Pilot Study to Determine Health Effects of e-cigarette in Healthy Young Adults | NIH | 8/20/2020-1/30/2024 | $829,856 |
| Co-I | Advanced Neuroimaging Analyses for LIMBIC-CENC | Veterans Health Admin/Uinv. of Utah | 3/22/2023-3/21/2024 | $271,590 |

***ii. Pending***

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| --- | --- | --- | --- | --- |
| Co-I | Sexual dimorphism in susceptibility to emphysematous tissue injury | NIH | 7/1/2023-6/30/2027 | $3,258,780 |
| Co-I | Development of State-of-the-Art Software Tools for Processing Multimodal Medical Images of Healthy and Diseased Human Feet | NIH/Augusta Univ. | 4/1/2023-3/31/2026 | $186,048 |
| Co-I | Development of Advanced Software Tools for Processing Multimodal Medical Images of Healthy and Diseased Adult Human Hands | NIH/Augusta Univ. | 7/1/2023-6/30/2028 | $340,227 |
| Co-I | Dissolved Phase Hyperpolarized Xenon-129 MRI: a novel biomarker to quantify pulmonary pathology in young healthy e-cigarette users | NIH | 9/1/2023-8/1/2028 | $4,024,746 |

# State

***i. Active***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Co-I | Acute Hypoxic Respiratory Failure | Virginia Biosciences Health Research Coporation | 4/15/2021-4/14/2026 | $3,740,000 |

1. **FELLOWS AND STUDENTS CO-SUPERVISED**

In addition to serving on doctoral dissertation committees, I also provide a supervisory/mentoring role for some of the students of my collaborators, specifically for teaching ANTsX software usage.

* Daniel Brennan (advisor: Junghoon Kim), School of Medicine, College University of New York, current dissertation committee member.
* Jesse Birchfield (advisor: Andrew Holbrook), Department of Biostatistics, University of California, Los Angeles, current dissertation committee member.
* Sebastian Giudice (advisor: Matthew Panzer), Center for Applied Mathematics, Department of Mechanical and Aerospace Engineering, University of Virginia. Dissertation committee member (2020). Co-author (PMID: 3275547).
* Andrew Holbrook (mentor: Daniel Gillen), Department of Statistics, University of California, Irvine. Collaborator/advisor on a large-scale Alzheimers disease effort. Co-author (PMID: 31356207 and PMID: 32875052).
* Andrew Grainger (advisor: Weibin Shi), Department of Radiology and Medical Imaging, University of Virginia**.** Collaborator/advisor on development using ANTsX. Co-author (PMID: 30235253 and PMID: 32771313).
* Batool Rizvi (advisor: Michael Yassa), Department of Neurobiology and Behavior, University of California, Irvine. Co-author (one accepted and one submttied).
* Zachariah Reagh (advisor: Michael Yassa), Department of Neurobiology and Behavior, University of California, Irvine. Co-author (PMID: 29518359, PMID: 31356207, and PMID: 30318785).
* Dana McMakin (advisor: Aaron T. Mattfeld), Cognitive Neuroscience Program, Department of Psychology, Florida International University. Co-author (PMID: 34270763).
* Nena Sinha (advisor: Mark Gluck), Center for Molecular and Behavioral Neuroscience, Rutgers University-Newark**.** Co-author **(**PMID: 30318785 and PMID: 29909179).
* Andrew Chen (advisors: Russell T Shinohara/Haochang Shou), Penn Statistics in Imaging and Visualization Center, Department of Biostatistics, Epidemiology, and Informatics, University of Pennsylvania. Co-author (PMID: 34904312).
* Joanne C. Beer (advisors: Russell T Shinohara/Kristin A Linn), Penn Statistics in Imaging and Visualization Center, Department of Biostatistics, Epidemiology, and Informatics, University of Pennsylvania. Co-author (PMID: 32640273).
* Danni Tu (advisor: Kristin A Linn), Penn Statistics in Imaging and Visualization Center, Department of Biostatistics, Epidemiology, and Informatics, University of Pennsylvania. Co-author (PMID: 35731973).
* Yi Xin (advisor: Maurizio Cereda), Department of Radiology, University of Pennsylvania. Co-author (PMID: 25640150, PMID: 29420904 and PMID: 32773690)

1. **PAPERS PUBLISHED OR IN PRESS**

**A. Peer Reviewed**

**2023**

1. **Nicholas J. Tustison\***, Michael A. Yassa, Batool Rizvi, Andrew J. Holbrook, Mithra T. Sathishkumar, James C. Gee, James R. Stone, and and Brian B. Avants. ANTsX neuroimaging-derived structural phenotypes of UK Biobank. *Hum Brain Mapp.* Submitted. DOI**:** [10.1101/2023.01.17.23284693](https://doi.org/10.1101/2023.01.17.23284693).
2. Fengling Hu, Alfredo Lucas, Andrew A. Chen, Kyle Coleman, Hannah Horng, Raymond W.S. Ng, **Nicholas J. Tustison**, Kathryn A. Davis, Haochang Shou, Mingyao Li, Russell T. Shinohara\*, and The Alzheimer’s Disease Neuroimaging Initiative. DeepComBat: A Statistically Motivated, Hyperparameter-Robust, Deep Learning Approach to Harmonization of Neuroimaging Data. Submitted. DOI**:** [10.1101/2023.04.24.537396](https://doi.org/10.1101/2023.04.24.537396).

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Kevin Donovan, **Nicholas J. Tustison**, Kristin A. Linn, Russell T. Shinohara\*, and the Alzheimer’s Disease Neuroimaging Initiative. Multivariate Residualization in Medical Imaging Analysis. Submitted. DOI**:** [10.1101/2023.02.15.528657](https://doi.org/10.1101/2023.02.15.528657).

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. William J. Garrison, Kun Qing, Mu He, Li Zhao, **Nicholas J. Tustison**, Jaime F. Mata, Y. Michael Shim, Alan M. Ropp, Talissa A. Altes, John P. Mugler III, and G. Wilson Miller\*. Lung Volume Dependence and Repeatability of Hyperpolarized 129Xe MRI Gas Uptake Metrics in Healthy Volunteers and Patients with COPD.  *Radiology: Cardiothoracic Imaging*. Accepted.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Batool Rizvi\*, Mithra T Sathishkumar, Soyun Kim, Freddie Márquez, Steven J. Granger, Myra S. Larson, Blake A. Miranda, Martina K. Hollearn, L. McMillan, B. Nan, **N. Tustison**, P. Lao, A. Brickman, Dana E. Greenia, M. Corrada, C. Kawas, and M. Yassa. Posterior white matter hyperintensities are associated with reduced medial temporal lobe subregional integrity and long-term memory in older adults. *Neuroimage Clin.* DOI: [10.1016/j.nicl.2022.103308](https://doi.org/10.1016%2Fj.nicl.2022.103308). Cited 0 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Danni Tu, Manu S. Goyal, Jordan D. Dworkin, Samuel Kampondeni, Lorenna Vidal, Eric Biondo-Savin, Sandeep Juvvadi, Prashant Raghavan, Jennifer Nicholas, Karen Chetcuti, Kelly Clark, Timothy Robert-Fitzgerald, Theodore D. Satterthwaite, Paul Yushkevich, Christos Davatzikos, Guray Erus, **Nicholas J. Tustison**, Douglas G. Postels, Terrie E. Taylor, Dylan S. Small, and Russell T. Shinohara\*. Automated Analysis of Low-Field Brain MRI in Cerebral Malaria.  *Biometrics*. DOI: [10.1111/biom.13708](https://doi.org/10.1111/biom.13708). Cited 0 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Adam Kimbler, Dana McMakin, **Nicholas J. Tustison**, and Aaron T. Mattfeld\*. Differential effects of emotional valence on mnemonic performance with greater hippocampal maturity. *Learning and Memory*, 30(3):55-62, Mar 2023. DOI: [10.1101/lm.053628.122](https://doi.org/10.1101/lm.053628.122). Cited 0 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Zhuang Song\*, Anithapriya Krishnan, Laura Gaetano, **Nicholas J. Tustison**, David Clayton, Alex de Crespigny, Thomas Bengtsson, Xiaoming Jia, and Richard A.D. Carano. Deformation-based morphometry identifies deep brain structures protected by ocrelizumab. *Neuroimage Clin*. DOI: [10.1016/j.nicl.2022.102959](https://doi.org/10.1016/j.nicl.2022.102959). Cited 0 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

**2022**

1. Stephen Guan, **Nick Tustison**, Kun Qing, Yun Michael Shim, John Mugler III, Talissa Altes, Dana Albon, Deborah Froh, Borna Mehrad, James Patrie, Alan Ropp, Braden Miller, Jill Nehrbas, Jaime Mata\*. 3D Single-Breath Chemical Shift Imaging Hyperpolarized Xe-129 MRI of Healthy, CF, IPF, and COPD Subjects. *Tomography*, 8(5), 2574-2587, Oct 2022. DOI: [10.3390/tomography8050215](https://doi.org/10.3390/tomography8050215). Cited 0 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Raghav Mehta, Angelos Filos, Ujjwal Baid, Chiharu Sako, Richard McKinley, Michael Rebsamen, Katrin Dätwyler, Raphael Meier, Piotr Radojewski, Gowtham Krishnan Murugesan, Sahil Nalawade, Chandan Ganesh, Ben Wagner, Fang F. Yu, Baowei Fei, Ananth J. Madhuranthakam, Joseph A. Maldjian, Laura Daza, Catalina Gómez, Pablo Arbeláez, Chengliang Dai, Shuo Wang, Hadrien Raynaud, Yuanhan Mo, Elsa Angelini, Yike Guo, Wenjia Bai, Subhashis Banerjee, Linmin Pei, Murat AK, Sarahi Rosas-González, Illyess Zemmoura, Clovis Tauber, Minh H. Vu, Tufve Nyholm, Tommy Löfstedt, Laura Mora Ballestar, Veronica Vilaplana, Hugh McHugh, Gonzalo Maso Talou, Alan Wang, Jay Patel, Ken Chang, Katharina Hoebel, Mishka Gidwani, Nishanth Arun, Sharut Gupta, Mehak Aggarwal, Praveer Singh, Elizabeth R. Gerstner, Jayashree Kalpathy-Cramer, Nicolas Boutry, Alexis Huard, Lasitha Vidyaratne, Md Monibor Rahman, Khan M. Iftekharuddin, Joseph Chazalon, Elodie Puybareau, Guillaume Tochon, Jun Ma, Mariano Cabezas, Xavier Llado, Arnau Oliver, Liliana Valencia, Sergi Valverde, Mehdi Amian, Mohammadreza Soltaninejad, Andriy Myronenko, Ali Hatamizadeh, Xue Feng, Quan Dou, **Nicholas Tustison**, Craig Meyer, Nisarg A. Shah, Sanjay Talbar, Marc-Andr Weber, Abhishek Mahajan, Andras Jakab, Roland Wiest, Hassan M. Fathallah-Shaykh, Arash Nazeri, Mikhail Milchenko, Daniel Marcus, Aikaterini Kotrotsou, Rivka Colen, John Freymann, Justin Kirby, Christos Davatzikos, Bjoern Menze, Spyridon Bakas, Yarin Gal, Tal Arbel\*. QU-BraTS: MICCAI BraTS 2020 Challenge on Quantifying Uncertainty in Brain Tumor Segmentation — Analysis of Ranking Scores and Benchmarking Results.  *The Journal of Machine Learning for Biomedical Imaging*. Aug 2022. Cited 8 times.

Dr. Tustison participated in the BraTS 2020 Challenge.

1. Nazek Queder, Michael J. Phelan, Lisa Taylor, **Nicholas Tustison**, Eric Doran, Christy Hom, Dana Nguyen, Florence Lai, Margaret Pulsifer, Julie Price, William C. Kreisl, Diana H. Rosas, Sharon Krinsky-McHale, Adam Brickman, Michael A. Yassa, Nicole Schupf, Wayne Silverman, Ira T. Lott, and David B. Keator\*. Joint-label fusion brain atlases for dementia research in down syndrome.  *Alzheimers Dement (Amst)*, 14(1):e12324, May 2022. DOI: [10.1101/2020.11.10.20228742](https://doi.org/10.1101/2020.11.10.20228742). Cited 0 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Andrew A. Chen, Joanne C. Beer, **Nicholas J. Tustison**, Philip A. Cook, Russell T. Shinohara, Haochang Shou\*, for the Alzheimer’s Disease Neuroimaging Initiative. Mitigating Site Effects in Covariance for Machine Learning in Neuroimaging Data.  *Hum Brain Mapp*, 43(4):1179-1195, Mar 2022. DOI: [10.1002/hbm.25688](https://doi.org/10.1002/hbm.25688). Cited 27 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Dana L McMakin, Adam Kimbler, **Nicholas J. Tustison**, Jeremy W Pettit, and Aaron T. Mattfeld\*. Negative Overgeneralization is Associated with Pattern Completion in Peripubertal Youth. *Soc Cogn Affect Neurosci*, 17(2):231-240, Feb 2022. DOI: [10.1101/2020.01.27.921742](https://doi.org/10.1101/2020.01.27.921742). Cited 10 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

**2021**

1. Andrew T. Grainger, Arun Krishnaraj, Michael H. Quinones, **Nicholas J. Tustison**, Samantha Epstein, Daniela Fuller, Aakash Jha, Kevin L. Allman, Weibin Shi\*. Deep learning-based quantification of abdominal subcutaneous and visceral fat volume on CT images.  *Acad Radiol*, 28(11):1481-1487, Nov 2021.  DOI: [10.1016/j.acra.2020.07.010](https://doi.org/10.1016/j.acra.2020.07.010). Cited 14 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Mu He, Kun Qing, **Nicholas J. Tustison**, Zach Beaulac, Tabitha W. King, Thomas B. Huff, Mikell Paige, Kranthikiran Earasi, Roselove Nunoo-Asare, Sarah Struchen, Marie Burdick, Zhimin Zhang, Alan Ropp, Grady W. Miller, James T. Patrie, Jaime F. Mata, John P. Mugler III, and Yun M. Shim\*. Characterizing gas exchange physiology in healthy young electronic-cigarette users with hyperpolarized 129Xe MRI: a pilot study.  *Int J Chron Obstruct Pulmon Dis*, 16:3183-3187, Nov 2021. DOI: [10.2147/COPD.S324388](https://doi.org/10.2147/copd.s324388). Cited 1 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. **Nicholas J. Tustison\***, Talissa A. Altes, Kun Qing, Mu He, G. Wilson Miller, Brian B. Avants, Yun M. Shim, James C. Gee, John P. Mugler III, and Jaime F. Mata. Image- versus histogram-based considerations in semantic segmentation of pulmonary hyperpolarized gas images.  *Magn Reson Med*, 86(5):2822-2836, Nov 2021. DOI: [10.1002/mrm.28908](https://doi.org/10.1002/mrm.28908). Cited 7 times.
2. Jaime Mata\*, Steven Guan, Kun Qing, **Nicholas Tustison**, Yun Shim, John P Mugler 3rd, Talissa Altes, Jhosep Huaromo, Borna Mehrad. Evaluation of Regional Lung Function in Pulmonary Fibrosis with Xenon-129 MRI. *Tomography*, 7(3):452-465, Sep 2021.  DOI: [10.3390/tomography7030039](https://doi.org/10.3390/tomography7030039). Cited 10 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. William Teague\*, Jaime Mata, Kun Qing, **Nicholas Tustison**, John Mugler, Craig Meyer, Eduard de Lange, Michael Shim, Kristin Wavell, Talissa Altes. Measures of Ventilation Heterogeneity Mapped with Hyperpolarized Helium-3 (HHe-3) MRI Demonstrate a T2-High Phenotype in Asthma.  *Pediatr Pulmonol*, 56(6):1440-1448, Jun 2021. DOI: [10.1002/ppul.25303](https://doi.org/10.1002%2Fppul.25303). Cited 2 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. **Nicholas J. Tustison\***, Philip A. Cook, Andrew J. Holbrook, Hans J. Johnson, John Muschelli, Gabriel A. Devenyi, Jeffrey T. Duda, Sandhitsu R. Das, Nicholas C. Cullen, Daniel L. Gillen, Michael A. Yassa, James R. Stone, James C. Gee, and Brian B. Avants for the Alzheimer’s Disease Neuroimaging Initiative. The ANTsX ecosystem for quantitative biological and medical imaging. *Sci Rep*. 11(1):9068, Apr 2021. DOI: [10.1101/2020.10.19.20215392](https://doi.org/10.1101/2020.10.19.20215392). Cited 46 times.
2. Brian B. Avants\*, **Nicholas J. Tustison**, and James R. Stone. Interpretable, similarity-driven multi-view embeddings from high-dimensional biomedical data.  *Nat Comput Sci*, 1(2):143-152, Feb 2021. DOI: [10.1038/s43588-021-00049-4](https://doi.org/10.1038/s43588-021-00049-4). Cited 9 times.

Dr. Tustison processed the data and provided direction with respect to the software used.

**2020**

1. James Stone\*, Brian Avants, **Nicholas Tustison**, Eric Wasserman, Jessica Gill, Elena Polejaeva, Kristine Dell, Walter Carr, Angela Yarnell, Matthew LoPresti, Peter Walker, Meghan O’Brien, Natalie Domeisen, Alycia Quick, Claire Modica, John D. Hughes, Francis Haran, Carl Goforth, and Stephen Ahlers. Functional and structural neuroimaging correlates of repetitive low-level blast exposure in career breachers.  *J Neurotrauma*, 37(23):2468-2481, Dec 2020. DOI: [10.1089/neu.2020.7141](https://doi.org/10.1089/neu.2020.7141). Cited 28 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Lukasz Myc, Kun Qing, Mu He, **Nicholas Tustison**, Zixuan Lin, Ani W Manichaikul, James Patrie, Joanne Cassani, Roselove N Nunoo-Asare, Yong Huang, Zaid Obaida, Sina Tafti, Alan M Ropp, Grady Wilson Miller, Jaime Mata, Talissa Altes, John Mugler, and Y Michael Shim\*. Characterisation of gas exchange in COPD with dissolved-phase hyperpolarised xenon-129 MRI.  *Thorax*, 76(2):178-181, Nov 2020. DOI: [10.1136/thoraxjnl-2020-214924](https://doi.org/10.1136/thoraxjnl-2020-214924). Cited 13 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Yi Xin, Maurizio Cereda, Hooman Hamedani, Kevin T. Martin, Nicholas J. Tustison, Mehrdad Pourfathi, Stephen Kadlecek, Sarmad Siddiqui, Faraz Amzajerdian, Marc Connell, Nicholas Abate, Agi Kajanaku, Ian Duncan, James C. Gee, and Rahim R. Rizi\*. Positional Therapy and Regional Pulmonary Ventilation: High Resolution Alignment of Prone and Supine Computed Tomography Images in a Large Animal Model.  *Anesthesiology*, 133(5): 1093–1105, Nov 2020. DOI: [10.1097/ALN.0000000000003509](https://doi.org/10.1097/aln.0000000000003509). Cited 9 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Joanne C. Beer, **Nicholas J. Tustison**, Philip A. Cook, Yvette I. Sheline, Russell T. Shinohara, Kristin A. Linn\*, for the Alzheimer’s Disease Neuroimaging Initiative. Longitudinal ComBat: A Method for Harmonizing Longitudinal Multi-scanner Imaging Data.  *Neuroimage*, 220:117129, Oct 2020. DOI: [10.1016/j.neuroimage.2020.117129](https://doi.org/10.1016/j.neuroimage.2020.117129). Cited 93 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Erin D. Bigler\*, Marc Skiles, Benjamin S.C. Wade, Tracy J. Abildskov, **Nicholas J. Tustison**, Randall S. Scheibel, Mary R. Newsome, Andrew R. Mayer, James R. Stone, Brian A. Taylor, David F. Tate, William C. Walker, Harvey S. Levin, and Elisabeth A. Wilde. FreeSurfer 5.3 versus 6.0: Are volumes comparable? A Chronic Effects of Neurotrauma Consortium Study.  *Brain Imaging Behav*, 14(5):1318-1327, Oct 2020. DOI: [10.1007/s11682-018-9994-x](https://doi.org/10.1007/s11682-018-9994-x). Cited 16 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. J. Sebastian Giudice, Ahmed Alshareef, Taotao Wu, Christina A. Gancayco, Kristen A. Reynier, **Nicholas J. Tustison**, T. Jason Druzgal, and Matthew B. Panzer\*. An Image Registration-Based Morphing Technique for Generating Subject-Specific Brain Finite Element Models.  *Ann Biomed Eng*, 48(10):2412-2424, Oct 2020. DOI: [10.1007/s10439-020-02584-z](https://doi.org/10.1007/s10439-020-02584-z). Cited 27 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Eric Aliotta\*, Sunil W Dutta, Xue Feng, **Nicholas J Tustison**, Prem P Batchala, David Schiff, Maria-Beatriz Lopes, Rajan Jain, Jason Druzgal, Sugoto Mukherjee, Sohil H Patel. Automated Apparent Diffusion Coefficient Analysis for Genotype Prediction in Lower Grade Glioma: Association with the T2-FLAIR Mismatch Sign.  *J Neurooncol*, 149(2):325-335, Sep 2020. DOI: [10.1007/s11060-020-03611-8](https://doi.org/10.1007/s11060-020-03611-8). Cited 17 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Andrew Holbrook\*, **Nicholas Tustison**, Freddie Marquez, Jared Roberts, Michael A. Yassa, Daniel Gillen. Anterolateral entorhinal cortex thickness as a new biomarker for early detection of Alzheimer’s disease.  *Alzheimers Dement (Amst)*, 12(1):e12068, Aug 2020. DOI: [10.1101/19011825](https://doi.org/10.1101/19011825). Cited 22 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Chase S Hall\*, James D Quirk, Charles W Goss, Daphne Lew, Jim Kozlowski, Robert P Thomen, Jason C Woods, **Nicholas J. Tustison**, John P Mugler 3rd, Lora Gallagher, Tammy Koch, Ken B Schechtman, Iulian C Ruset, F William Hersman, Mario Castro. Single-Session Bronchial Thermoplasty Guided by 129Xe Magnetic Resonance Imaging.  *Am J Respir Crit Care Med*, 202(4):524-534, Aug 2020. DOI: [10.1164/rccm.201905-1021OC](https://doi.org/10.1164/rccm.201905-1021oc). Cited 46 times.

Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols

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Dr. Tustison provided direction with respect to the software used and guidance on analysis protocols.

1. Neda Jahanshad\*, Joshua Faskowitz, Gennady Roshchupkin, Derrek P. Hibar, Boris A. Gutman, **Nicholas J. Tustison**, Hieab H.H. Adams, Wiro J. Niessen, Meike W. Vernooij, M. Arfan Ikram, Marcel P. Zwiers, Alejandro Arias Vasquez, Barbara Franke, Jennifer L. Kroll, Benson Mwangi, Jair C. Soares, Alex Ing, Sylvane Desrivieres, Gunter Schumann, Narelle K. Hansell, Greig I. de Zubicaray, Katie L. McMahon, Nicholas G. Martin, Margaret J. Wright, Paul M. Thompson and the Alzheimer’s Disease Neuroimaging Initiative. Multi-Site meta-analysis of morphometry.  *IEEE/ACM Trans Comput Biol & Bioinform*, 16(5):1508-1514, Oct 2019. DOI: [10.1109/tcbb.2019.2914905](https://doi.org/10.1109/tcbb.2019.2914905). Cited 6 times.

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1. Erin D Bigler\*, Tracy J Abildskov, Barry Eggleston, Brian A Taylor, David F Tate, Jo Ann Petrie, Mary R Newsome, Randall S Scheibel, Harvey Levin, William C Walker, Naomi Goodrich-Hunsaker, **Nicholas J Tustison**, James R Stone, Andrew R Mayer, Timothy D Duncan, Gerry E York, and Elisabeth A Wilde. Structural neuroimaging in mild traumatic brain injury: A chronic effects of neurotrauma consortium study. *Int J Methods Psychiatr Res*, 28(3): e1781, Sep 2019. DOI: [10.1002/mpr.1781](https://doi.org/10.1002/mpr.1781). Cited 10 times.

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Dr. Tustison collaborated on the software.

1. Nasreen Sayed, Changho Choi, **Nicholas Tustison**, Jared Roberts, Michael Yassa, Erin Van Enkevort, Alyson Nakamura, Elena I Ivleva, Prabha Sunderajan, David A Khan, Miguel Vazquez, Bruce McEwen, Alexandra Kulikova, Traci Holmes, and Sherwood Brown\*. A Randomized, Double-Blind, Placebo-Controlled Trial of Lamotrigine for Prescription Corticosteroid Effects on the Human Hippocampus. *Eur Neuropsychopharmacol*, 29(3):376-383, Mar 2019. DOI: [10.1038/s41386-019-0430-8](https://doi.org/10.1038/s41386-019-0430-8). Cited 8 times.

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Dr. Tustison provided the image analysis techniques for quantifying ventilation.

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The ANTs software library, written by Dr. Tustison, was used to provide cortical thickness measures.

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Dr. Tustison provided the image analysis techniques for quantifying ventilation.

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Dr. Tustison provided the processed ADNI data and mentored the first author in the use of ANTs to derive further measurements for this publication.

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The ANTs software library, written by Dr. Tustison, was used to provide the quantitative image measures.

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Drs. Avants and Tustison jointly wrote the software and performed the evaluation.

**2010**

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Dr. Tustison implemented the repairing algorithm and ran the evaluation.

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Dr. Tustison ran the software to perform the evaluation.

**B. Books and/or Chapters**

1. **Nicholas J. Tustison** and Amir A. Amini: 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.
2. Brian B. Avants and **Nicholas J. Tustison**: Mapping the Spatial Distribution of Lesions in Stroke: Effect of Diffeomorphic Registration Strategy in the ATLAS Dataset. Lesion-to-symptom mapping: principles and tools. Dorian Pustina and Daniel Mirman (eds.). New York, NY: Humana Press, 2022.
3. **INVITED LECTURES AND SYMPOSIUM**

Organization for Human Brain Mapping Open Code: Myths Debunked 2022

Statistics in Medical Imaging Collaborative Case Study 2019

ICERM at Brown University Intro to the ANTsX Ecosystem 2019

MICCAI Tutorial SimpleITK 2015

CREATE-MIA at McGill University ANTs Workshop 2015

SPIE Workshop Open-source tools in imaging 2012