CURRICULUM VITAE

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Education:

1998	Diplôme d'Ingénieur	Software Engineering	Institut Polytechnique de Sévenans, France
1998	M.Sc.	Computer Science (Advisor: John M. Gauch)	University of Kansas
2003	Ph.D.	Computer Science (Advisor: Kaleem Siddiqi)	McGill University, Canada

Postdoctoral Training:

2003-2005	Research Fellow	Medical Image Analysis (Advisor: Martha E. Shenton)	Brigham & Women's Hospital

Faculty Academic Appointments:

2005-2008	Instructor	Psychiatry	Harvard Medical School
2008-	Assistant Professor	Psychiatry	Harvard Medical School
2016-	Adjunct Faculty	Electrical & Computer Engineering	Northeastern University

Appointments at Hospitals/Affiliated Institutions:

2003-2005	Fellow	Laboratory of Neuroscience, Clinical Neuroscience Division	VA Boston Healthcare System, Brockton, MA
2003-2005	Fellow	Surgical Planning Laboratory	Brigham & Women's Hospital, Boston, MA
2005-2008	Research Scientist	Laboratory of Neuroscience, Clinical Neuroscience Division	VA Boston Healthcare System, Brockton, MA
2005-	Lead Investigator	Psychiatry Neuroimaging Laboratory	Brigham & Women's Hospital, Boston, MA

Major Administrative Leadership Positions:

Local

2005-	Director of Information Systems Operations	Psychiatry Neuroimaging Laboratory, Brigham & Women's Hospital.
2008-	Associate Director	Psychiatry Neuroimaging Laboratory, Brigham & Women's Hospital.

Committee Service:

Local

2005-	Space Committee	Psychiatry Neuroimaging Laboratory, Brigham & Women's Hospital Chair, responsible for allocating space and infrastructure to laboratory personnel.
2007-	Leadership Committee	Psychiatry Neuroimaging Laboratory, Brigham & Women's Hospital Member, monthly meeting to review and plan for the financial and scientific goals of the lab.
2010-	Trainee Admission Committee	Psychiatry Neuroimaging Laboratory, Brigham & Women's Hospital Chair, responsible for screening and selecting research trainees for short- and long-term internships.

National

2008	Organizing Committee	Workshop on Brain Imaging, Mathematical Biosciences Institute, Ohio State University.
2009-	Neuroimaging Leadership Committee	INTRuST, DoD funded Post-traumatic Stress Disorder/Traumatic Brain Injury (PTSD/TBI) Clinical Consortium. Member, provide neuroimaging leadership to the PTSD/TBI clinical consortium.
2011-	Image Post-Processing Committee	INTRuST, Post-traumatic Stress Disorder/Traumatic Brain Injury (PTSD/TBI) Clinical Consortium. Member, provide post-processing recommendations for the PTSD/TBI clinical consortium.
2016-	Neuroimaging Leadership Committee	DIAGNOSE-CTE, NIH funded Chronic Traumatic Encephalopathy multi-site consortium. Member, provide

		neuroimaging leadership to the four sites that are acquiring data and overseeing all image post-processing.
2016-	Neuroimaging Leadership Committee	HCP-EP, NIH funded Human Connectome Project in Early Psychosis multi-site consortium. Member, provide neuroimaging leadership to the two sites that are acquiring data and overseeing all image post-processing.

International

2005-2007	Program Committee	Canadian Conference on Computer and Robot Vision.
2010-	Program Committee	International Conference on Information Processing in Medical Imaging.
2015-	Program Committee	Interactive Medical Image Computing Workshop.

Professional Societies:

2004-	Medical Image Computing and Computer Assisted Intervention Society	Member.
	2010-	Member, Computational Diffusion MRI Workshop Committee.
	2015-	Member, Interactive Medical Image Computing Workshop Committee.
	2017	Area Chair, Annual Conference Program Committee
2005-2010	Institute of Electrical and Electronics Engineers Society	Member.

Grant Review Activities:

2017	Collaborative Research in Computational Neuroscience (CRCNS)	NSF, NIH, German Federal Ministry for Education and Research (BMBF), French National Research Agency (ANR), and US-Israel Binational Science Foundation (BSF). Panelist.

Editorial Activities:

Ad hoc Reviewer

American Journal of Psychiatry
Biological Psychiatry
Brain Imaging and Behavior
Computer Vision and Image Understanding
Human Brain Mapping
IEEE Transactions on Medical Imaging
IEEE Transactions on Information Technology in Biomedicine
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Biomedical Engineering
IEEE Visualization
Image and Vision Computing
International Conference on Computer Vision and Pattern Recognition
International Conference on Medical Image Computing and Computer-Assisted Intervention
International Journal of Pattern Recognition and Artificial Intelligence
Magnetic Resonance Imaging
Medical Image Analysis
NeuroImage
Neurobiology of Aging
Pediatrics
Proceedings of the National Academy of Sciences

Other Editorial Roles

2014	Special Issue Editor	Brain Imaging and Behavior
2015-	Review Editor	Computer Image Analysis

Honors and Prizes:

1998	Dean's Honors List	University of Kansas	Graduate student award
2001, 2002	J.W. McConnell Award	McGill University	Graduate student award
2003	Dean's Honor's List	McGill University	Graduate student award
2009	MICCAI Young Scientist Award	Medical Image Computing and Computer-Assisted Intervention	Best paper award
2014	MICCAI Young Scientist Award	Medical Image Computing and Computer-Assisted Intervention	Best paper award
2015	Nelson Butters Award	National Academy of Neuropsychology	Best paper award

Report of Funded and Unfunded Projects

Funding Information:

Past

2005-2010 Computerized Image Analyses of MR Scans in Schizophrenia
R01MH50740
Co-Investigator (PI: Martha E. Shenton)
This project investigated white matter abnormalities in schizophrenia, using magnetic resonance diffusion tensor imaging (MR-DTI).

2006-2011 Neuroimaging Insights into Schizophrenia & Treatment Implications
VA Schizophrenia Center Grant
Co-Investigator (PI: Robert W. McCarley)
This project investigated neuroimaging abnormalities in schizophrenia.

2007-2012 Vulnerability to Progression Schizophrenia
P50MH080272
Co-Investigator (PI: Robert W. McCarley)
Study subjects who are at various stages of progression of schizophrenia, prodromal, first episode and chronic, in a prospective longitudinal study using clinical, cognitive, neuroimaging, electrophysiological, hormonal and genetic markers.

2008-2011 MRI and Neurological Findings in Schizophrenia, ADHD, and Healthy Controls
R03TW008134
Co-Investigator (PI: Martha E. Shenton)
The research goal of this proposal was to facilitate the further development of collaborative research between NIH supported U.S. biomedical scientists and investigators in Turkey, a FIRCA eligible country. The scientific objective was the study of prefrontal, hippocampus-amygdala, caudate and superior temporal gyrus volumes measured by Magnetic Resonance Imaging in adult subjects with schizophrenia and their "high-risk" first-degree relatives.

2009-2010 Diagnosis of Diffuse Axonal Injury with Diffusion Tensor Imaging
NCE Center for Integration of Medicine and Innovative Technology (CIMIT).
2010-2012 Soldier in Medicine New Concept Award.
Principal Investigator
The goal of this project was to develop new medical imaging tools for the detection of neuroimaging abnormalities in subjects with mild traumatic brain injury.

2009-2014 MR Brain diffusion tensor imaging in Schizophrenia
VA Merit Award
Co-Investigator (PI: Martha E. Shenton)
This project's goal was the study of white matter abnormalities in schizophrenia using advance diffusion magnetic resonance imaging techniques.

2009-2013 Computational Morphometry in Schizophrenia and Related Disorders
NCE R01MH082918
2013-2015 ***Principal Investigator***
The goal of this project is to design computational tools to analyze the morphometry of brain structures in the context of schizophrenia and related disorders.

2009-2013 Neuroimaging Leadership for the 10 PTSD/TBI Clinical Consortium Sites
NCE W81XWH-08-2-0159 - Department of Defense.
2013-2016 *Co-Investigator (PIs: Martha E. Shenton, Ron Kikinis, Bruce Rosen)*
The goal was to provide neuroimaging leadership to the PTSD-TBI Clinical Consortium to improve our understanding of the longitudinal course, etiology, pathophysiology and, especially, the treatment of PTSD, TBI (principally mild TBI), and their interface.

2011-2013 Post-Processing of Images for Clinical Consortium
NCE W81XWH-08-2-0159 - Department of Defense
2013-2016 *Co-Investigator (PIs: Martha E. Shenton, Ron Kikinis, Bruce Rosen)*
The goal was to generate gray and white matter neuroimaging measures from data acquired in 400+ subjects from the PTSD-TBI Clinical Consortium.

2011-2014 Diagnosis of diffuse axonal injury using robust tract-based quantification of diffusion tensor imaging
CIMIT Innovation Grant
Co-Investigator (PI: Lauren O'Donnell)
The goal of this project was to further develop diffusion MRI tools to better diagnose diffuse axonal injury in subjects with mild traumatic brain injury.

2012-2016 Biomarkers for Psychosis in Velocardiofacial Syndrome
R01MH64824
Consultant (PI: Wendy Kates)
The goal of the project was to investigate neuroanatomic alterations with anatomic magnetic resonance imaging and diffusion tensor imaging to characterize psychosis in subjects with velocardial facial syndrome.

Current

2013-2018 Neural Substrates of Diffusion Imaging in Cognitively Aging Rhesus Monkeys
R01AG042512
Co-Investigator (PI: Marek Kubicki, Nikolaos Makris, Douglas Rosene)
The goal of this project is to acquire, prior to death, cognitive assessments, brain diffusion tensor imaging, and then postmortem brain tissue to explore the biological underpinnings and to establish the specificity of the diffusion imaging biomarkers.

2014-2018 Development of MR Biomarkers of Brain Injury in Acute and Chronic mTBI
VA Merit Award
Co-Investigator (PI: Martha E. Shenton)
This proposal will develop objective radiological markers for the diagnosis of mTBI using advanced multimodal neuroimaging techniques and a brain atlas will be used to characterize individual profiles of injury (personalized medicine) in both civilian and Veteran populations.

2014-2019 Diffusion Imaging Biomarkers for Risk, Onset and Outcome in Schizophrenia
R01MH102377
Co-Investigator (PI: Marek Kubicki)
The aim of this project is to use diffusion magnetic resonance imaging, including newly developed imaging biomarkers related to neurodevelopment, neuroinflammation, and neurodegeneration, along with cutting edge analytic software, to investigate and to understand further the biological nature, temporal dynamics and clinical consequences of white matter abnormalities in schizophrenia and schizophrenia risk.

2015-2022 Chronic Traumatic Encephalopathy: Detection, Diagnosis, Course, and Risk Factors
U01NS093334
Co-Investigator (PIs: Robert Stern, Jeffrey Cummings, Eric Reiman, Martha Shenton)
This study will be the first multicenter study to examine possible tools for CTE diagnosis and to validate diagnostic criteria for the clinical diagnosis of this potentially preventable disease.

2015-2017 Structural Connectivity Biomarkers in Prodromes and 22Q11.2 Deletion Syndrome
R21MH106793
Co-Investigator (PI: Zora Kikinis)
The aim of this project is to explore changes in white matter in the brains of individuals diagnosed with 22q11Deletion Syndrome, a genetic disease with a deletion on chromosome 22 that is associated with a high risk for developing schizophrenia.

2016-2019 CRCNS:Subject-Specific Diffusion MRI Profiles of Injury in TBI and PTSD
R01HD090641
Principal Investigator *($545,336 total direct costs)*
The goal of this proposal is to develop a robust framework to perform subject-specific neuroimaging analyses of Diffusion MRI. New algorithms will be developed to create Individualized Brain Abnormality maps that will have a number of clinical and research applications.

2016-2020 Human Connectome Project for Early Psychosis
U01MH109977
Co-Investigator (PIs: Alan Breier, Martha Shenton)
The main goal of the proposed "Human Connectome Project for Early Psychosis" is to acquire high quality imaging, behavioral, clinical, cognitive, and genetic data on an important cohort of early psychosis patients, in a manner consistent with the original Human Connectome Project, where data from this project will be made available to the research community for future studies.

2016-2021 Next Generation Diffusion MRI Biomarkers for Prodromal Schizophrenia
R01MH108574
Co-Investigator (PI: Ofer Pasternak)
We will develop novel analysis approaches for next generation diffusion magnetic resonance imaging that will enable the identification of subtle brain pathologies in prodromal schizophrenia subjects.

2017-2022 High Resolution, Comprehensive Atlases of the Human Brain Morphology
R01MH112748
Principal Investigator *($1,863,593 total direct costs requested)*
We will develop and disseminate state-of-the-art, high-resolution full brain anatomical atlases, based on the manual parcellation of 100 MRI images provided by the Human Connectome Project. The availability of such an atlas will greatly advance research in brain morphometry, function and connectivity.

Projects Submitted for Funding

Pending (5Y project)
Beyond schizophrenia: voice hearing in trauma spectrum disorder (PI: Ann Shinn)
NIMH
Site Principal Investigator *($256,778 total direct costs to BWH requested)*
This proposal aims to better characterize the epidemiology, phenomenology, and neurobiology of voice hearing in PTSD, DID, and BPD—patient populations in which voice hearing is understudied. Though we propose to use AVH in Sz as a reference for comparison, we expect to find that voice hearing is neither purely "schizophrenic" nor a symptom of PTSD, DID, or BPD—but rather an experience that arises through multi-factorial etiology, including trauma, and associated with a specific neurobiology that transcends diagnosis.
Scientific Review 02/2018

Pending (5Y project)
ENIGMA TBI Working Group: "Big Data" Statistical Approaches to Identify Clinically Meaningful Imaging Biomarkers (PI: David Tate)
NIH
Site Principal Investigator *($250,345 total direct costs to BWH requested)*
This proposal establishes a new line of research in the ENIGMA consortium to improve our understanding of neuroimaging findings in patients with mTBI using existing data, the effects of common comorbidities and demographic characteristics, and help to establish the organizational and theoretical foundation for future genetics research in mTBI.
Scientific Review 02/2018

Training Grants and Mentored Trainee Grants

2013-2018
The Stuart T. Hauser Clinical Research Training Program in Biological & Social Psychiatry
T32 MH016259
Preceptor (PI: Martha E. Shenton)
Currently, the CRTP offers five stipends that support postdoctoral candidates for two-year fellowships, contingent upon successful completion of the first year. Preceptors from over 40 different research sites throughout Harvard are paired with appropriate postdoctoral fellows.

Unfunded Current Projects

2014-
Developing a robust open source neuroimaging analysis platform
Principal Investigator
I am supervising a research engineer in implementing and disseminating a robust image processing pipelines to facilitate the analysis of large data sets of neuroimaging data using state-of-the-art algorithms developed at the PNL.
https://github.com/pnlbwh/pnlutil/blob/master/pipeline/README.md

Report of Local Teaching and Training

Teaching of Students in Courses:

2008,2009	Brain and Behavior: Research Methods and Technologies *Undergraduate level*	Harvard University Guest Lecturer, One hour lecture

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs):

2008	Neuroimaging Research in Schizophrenia *1st year psychiatry residents*	Harvard Longwood Psychiatry Residency Training Program One hour lecture
2009	Population Studies with Diffusion Tensor Imaging, *Postdoctoral research fellows*	Weekly seminar (5 sessions) Laboratory of Mathematics in Imaging, Brigham & Women's Hospital

Laboratory and Other Research Supervisory and Training Responsibilities:

2003-	Supervision of Research Assistants, The lab hosts an average of 5 research assistants.	Daily mentorship, weekly lab meetings, weekly 1:1 supervision for 1/2 hour per week for each RA. *Neuroimaging training, abstract and presentation preparation supervision.*
2003-	Neuroimaging Technical Training of Medical Students	Bi-yearly seminars and 1:1 instruction as needed. *Neuroimaging training.*
2005-	Supervision of Post-Doctoral Fellows. I supervise between 1 and 3 postdoc at any given time.	Daily mentorship as needed, and 1:1 supervision for 1 hour per week for each post-doc. *Paper and grant preparation, scientific advising.*
2005-	Training of Visiting Research Fellows I supervise between 1 and 3 visiting researchers at any given time.	1:1 supervision for 1/2 hour per week per fellow and private instruction as needed. *Neuroimaging training, paper and grant preparation, scientific advising.*
2005-	Supervision of Research Software Engineer.	1:1 supervision for 1/2 hour per week and private instruction as needed. *Neuroimaging training, scientific advising.*

Mentored Trainees and Faculty within HMS and/or BWH:

2005-2007	Marc Niethammer, Ph.D. - Post-doctoral Fellow, Now Associate Professor at UNC Chapel Hill, *Co-authored seven publications and is still an active collaborator.*

2005-2008 Katharina Quintus, M.Eng.- Software Engineer,
Now User Experience Architect at Ergonomie & Technologie, Switzerland.

2007-2008 JungSu Oh, Ph.D. - Post-doctoral Fellow,
Now Staff Physicist at ASAN Medical Center, Seoul, Korea,
Co-authored two publications.

2007-2010 Yogesh Rathi, Ph.D. - Post-doctoral Fellow,
Now Associate Professor, Psychiatry Neuroimaging Lab, BWH, Harvard Medical School,
Co-authored 16 publications, is a colleague and still an active collaborator.

2008-2014 Padmapriya Srinivasan - Research Assistant,
Now Data Scientist at Quanttus,
Co-authored one publication.

2008-2009 Julien de Siebenthal, Ph.D. - Research Engineer,
Now Co-Founder of Sm@rt_Tree a firm specialized in software development and consulting.

2008-2012 Peter Savadjiev - Post-doctoral Fellow,
Now Assistant Professor, McGill University, Canada,
Co-authored nine publications, is a colleague and still an active collaborator.

2009-2012 Paula Pelavin - Research Assistant,
Now Physician Assistant at OLE Health
Co-authored two publications.

2009-2012 Ofer Pasternak - Post-doctoral Fellow,
Now Assistant Professor, Psychiatry Neuroimaging Lab, BWH, Harvard Medical School,
Co-authored ten publications, is a colleague and still an active collaborator.

2010- Ryan Eckbo – Research Engineer,
Provide supervision and training in all aspects of scientific computing at the PNL. We have been building an open source platform for neuroimaging pipelines.

2010-2013 Tamar Riklin Raviv - Post-doctoral Fellow,
Now Assistant Professor, Ben-Gurion University of the Negev, Israel,
Co-authored two publications and still an active collaborator.

2010-2013 Demian Wassermann - Post-doctoral Fellow,
Now Research Scientist, INRIA, Sophia-Antipolis, France,
Co-authored two publications and recently submitted a collaborative US-France NSF grant application which was recently funded (2016; see Current Funding, above).

2011-2013 Yi Gao - Post-doctoral Fellow
Now Assistant Professor, Stony Brook University,
Co-authored eight publications and is still an active collaborator.

2016 Chris Lepage - Pre-Doctoral Research Fellow.
Now Clinical Psychology PhD candidate with the University of Ottawa and clinical psychology resident with the Saskatoon Health Region,
Supervised a six month project. Submitted one manuscript for publication.

2016 Mehmet Akif Camkurt - Visiting MD from Turkey.
Now Psychiatrist at Afşin State Hospital, Turkey.
Supervised a one month project.

2016 Salvatore Lacava - Giovanni Armenise-Harvard Foundation Summer Fellow.
Now Master's student in cognitive neuroscience at University of Trento, Italy.
Supervised a two month project.

2016- Sophia Swago - Research Assistant,
Supervising her project on reliability of Human Connectome dataset.

2016- Matt Higger - Post-Doctoral Research Fellow in the Stuart T. Hauser Research Training Program in Biological and Social Psychiatry.
Supervising his two year fellowship starting 12/1/2016.

Other Mentored Trainees and Faculty:

2005	Jacob Albertson - High School Summer Student. Now Forward Deployed Engineer at Palantir Technologies.
2005-2008	Kilian Pohl, Ph.D. – MIT Graduate Student, Program Director, SRI International, Now Program Director, Image Analysis, SRI International, and Consulting Assistant Professor, Stanford University, *Co-authored five publications during his fellowship, including the MedIA - MICCAI 06 Best Paper.*
2007	Francois Budin, M.Eng.- UNC Chapel Hill Graduate Student, Now Research Engineer at Kitware, Inc. *Co-authored one publication, wrote software module to transform Diffusion MR images*.
2008-2010	James Malcolm – Georgia Tech PhD student Now MD student at Emory School of Medicine, Atlanta, GA *Member of his PhD Committee*. *Co-authored three publications.*
2010	Edward Vargas - High School Student attending the Research Science Institute at MIT, Now MIT undergraduate student, *Semi-finalist of 2010 Intel Talent Search high-school science competition for his project started at the PNL under my supervision.*
2011	Felipe Hernandez - High School Student attending the Research Science Institute at MIT, Now MIT undergraduate student. *2012 US Physics Team.*
2012	Sindy Tan - High School Student attending the Research Science Institute at MIT, Now Harvard Undergraduate student.
2013	Phoebe Cai - High School Student attending the Research Science Institute at MIT, MIT undergraduate student.
2014	Timothy Gebhard – Undergraduate Honors Thesis Student. *Co-authored one publication.*
2014	Sophie Leroux – B.Eng. student at Institut Supérieur des BioSciences de Paris Now Image processing engineer at Centre national de la recherche scientifique (CNRS), France, *Supervised her honors thesis.*
2014	Jenny Wang - High School Student attending the Research Science Institute at MIT, Now Undergraduate student at Harvard University, *Regional Finalist of 2014 Siemens Science Competition for her project started under my supervision.*
2014	Shardul Sathe - M.Sc. student at Northeastern University, Now Software engineer at Intel. *Co-supervised his Master's thesis.*
2014-2015	Amicie de Pierrefeu - M.Sc. student at EPFL, Switzerland, Now Ph.D. student at NeuroSpin, Université de Paris-Saclay, France, *Supervised her Master's thesis, co-authored one publication.*
2015	Mana Shams - High School Student attending the Research Science Institute at MIT. Now undergraduate student at Karolinska Institutet, Sweden, *Presented the work she did under my supervision at the 2016 Stockholm International Youth Science Seminar.*
2015-2016	Matineh Shaker - Ph.D. student at Northeastern University, Now Machine Learning Engineer at Stealth-mode Startup, *Supervised an eight month project as part of her PhD work, member of her PhD Committee*. *Co-authored two publications.*

Local Invited Presentations:

No presentations below were sponsored by outside entities

2004	Hierarchical Atlas Based Segmentation Harvard Brockton VA Neuroscience Laboratory
2004	Characterizing the Shape of Anatomical Structures with Poissons Equation Surgical Planning Laboratory – BWH
2005	Comparing Brain Tissue Classifiers Laboratory of Mathematics in Imaging – BWH
2005	Comparing Brain Tissue Classifiers Harvard Brockton VA Neuroscience Laboratory
2006	Validation of Automatic Brain Classifiers National Alliance for Medical Image Computing All Hands Meeting
2013	Increased Diffusion Anisotropy in Gray Matter in Mild TBI Martinos Center, Massachusetts General Hospital
2015	Sample Size Estimation for Outlier Detection Laboratory of Mathematics in Imaging – BWH
2015	Sparse model learning for high dimensional diffusion MRI data in traumatic brain injury Laboratory of Mathematics in Imaging – BWH

Report of Regional, National and International Invited Teaching and Presentations

No presentations below were sponsored by outside entities

Regional

2003	Medial Surfaces and Applications to Medical Imaging Medical Vision Group, Massachusetts Institute of Technology, Cambridge, MA.
2005	Medical Image Analysis with Slicer Brain Imaging Lab., Dartmouth Medical Center, NH.
2006	Slicer Training Brain Imaging Lab., Dartmouth Medical Center, NH.
2009	Neuroimaging Population Studies Massachusetts Institute of Technology, Cambridge, MA. HST582 - Biomedical Signal and Image Processing.
2014	Shape Analysis, Individualized Proles of Injury, Robust Image Analysis Northeastern University, Boston, MA.

National

2003	Shape Analysis Using Medial Representations Medical Image Display and Analysis Group University of North Carolina, Chapel Hill.
2011	INjury and TRaumatic STress Consortium Neuroimaging Leadership Core Coma and Consciousness Symposium, Miami, FL.
2016	DIAGNOSE-CTE MR Scanning and QA/QC Training Mayo Clinic, Scottsdale, AZ.
2016	Human Connectome Project for Early Psychosis National Institutes of Health, Bethesda, MD.
2017	DIAGNOSE-CTE MR Scanning and QA/QC Training NYU Langone Medical Center, New York, NY.
2017	DIAGNOSE-CTE MR Scanning and QA/QC Training Lou Ruvo Center for Brain Health, Cleveland Clinic, Las Vegas, NV.

International

2004	Technical Challenges in Schizophrenia Research Center for Intelligent Machines, McGill University, Canada.
2006	Introduction to Medical Image Processing Life and Health Sciences Research Institute, University of Minho, Portugal.
2007	An Introduction to Neuroimaging Research in Schizophrenia Kangwon National University Hospital, Chuncheon, South Korea.
2007	Shape Analysis of Neuroanatomical Structure Hanyang University, Seoul, South Korea.
2007	Medical Image Analysis with Slicer Kangwon National University Hospital, Chuncheon, South Korea.
2008	Hands On DTMRI Analysis with Slicer Centre for Addiction and Mental Health, University of Toronto, Canada.
2008	Neuroimaging Research in Schizophrenia Centre for Addiction and Mental Health, University of Toronto, Canada.
2009	An Introduction to Neuroimaging Research in Schizophrenia School of Computer Science, McGill University, Montreal, Canada.
2013	Introduction to Diffusion Tensor Image Processing Life and Health Sciences Research Institute, University of Minho, Portugal.
2017	A personalized medicine approach to neuroimaging TBI "A Picture is Worth a Thousand Words (When There is a Common Language): Overcoming Obstacles in TBI Neuroimaging Research", Educational Symposium, International Brain Injury Association's World Congress, New Orleans, LA

Report of Technological and Other Scientific Innovations

2003- I have been involved in the design, implementation and testing of multiple aspects of the 3D slicer (www.slicer.org), a free open source software suite for Medical Image Analysis. I have specifically worked on modules to:

- perform virtual colonoscopy, endoscopy and lung image analysis,
- segment brain MRI,
- semi-automatically realign brain images,
- correct for imaging artifacts in diffusion MRI,
- testing procedures to ensure reliability of MR analysis measurements.

3D Slicer was downloaded over 70,000 times in the past year only.

2011- I have been supervising the development of an image processing pipeline to perform structural and diffusion MRI analysis on large datasets. The pipeline is available as an open source project to the community and includes:

- automated brain masking,
- full brain segmentation,
- diffusion MRI distortion correction,
- full brain tractography,
- automated extraction of fiber bundle of interest.

We have processed thousands of cases with this pipeline in our laboratory. It is freely available (https://github.com/pnlbwh/pnlutil/), and is now being used by many of our collaborators (BWH and MGH, SUNY Syracuse, University of Missouri St. Louis, China, Germany, India).

Report of Scholarship

Peer-Reviewed Scholarship in print or other media:

*denotes co-first authorship
**denotes current or former trainee

Research Investigations

1. Gauch JM, Gauch S, **Bouix** S, Zhu X. Real time video scene detection and classification. Inf Process Manag 1999; 35: 381–400.
2. Siddiqi K, **Bouix** S, Tannenbaum A, Zucker SW. Hamilton-Jacobi skeletons. Int J of Comput Vis 2002; 48: 215–231.
3. Wiegand LC, Warfield SK, Levitt JJ, Hirayasu Y, Salisbury DF, Heckers S, **Bouix** S, Schwartz D, Spencer M, Dickey CC, Kikinis R, Jolesz FA, McCarley RW, Shenton ME. An in vivo MRI study of prefrontal cortical complexity in first-episode psychosis. Am J Psychiatry 2005; 162: 65–70.
4. **Bouix** S, Pruessner JC, Louis Collins D, Siddiqi K. Hippocampal shape analysis using medial surfaces. Neuroimage 2005; 25: 1077–1089.
5. **Bouix** S, Siddiqi K, Tannenbaum A. Flux driven automatic centerline extraction. Med Image Anal 2005; 9: 209–221.
6. Haidar H, **Bouix** S, Levitt JJ, McCarley RW, Shenton ME, Soul JS. Characterizing the shape of anatomical structures with Poisson's equation. IEEE Trans Med Imaging 2006; 25: 1249–1257.
7. Koo M-S, Dickey CC, Park H-J, Kubicki M, Ji NY, **Bouix** S, Pohl KM, Levitt JJ, Nakamura M, Shenton ME, McCarley RW. Smaller neocortical gray matter and larger sulcal cerebrospinal fluid volumes in neuroleptic-naive women with schizotypal personality disorder. Arch Gen Psychiatry 2006; 63: 1090–1100.
8. **Bouix** S, Martin-Fernandez M, Ungar L, Nakamura M, Koo M-S, McCarley RW, Shenton ME. On evaluating brain tissue classifiers without a ground truth. Neuroimage 2007; 36: 1207–1224.
9. Pohl KM**, **Bouix** S, Nakamura M, Rohlfing T, McCarley RW, Kikinis R, Grimson WEL, Shenton ME, Wells WM. A hierarchical algorithm for MR brain image parcellation. IEEE Trans Med Imaging 2007; 26: 1201–1212.
10. Pohl KM**, Fisher J, **Bouix** S, Shenton M, McCarley RW, Grimson WEL, Kikinis R, Wells WM. Using the logarithm of odds to define a vector space on probabilistic atlases. Med Image Anal 2007; 11: 465–477.
11. Nakamura M, Salisbury DF, Hirayasu Y, **Bouix** S, Pohl KM, Yoshida T, Koo M-S, Shenton ME, McCarley RW. Neocortical gray matter volume in first-episode schizophrenia and first-episode affective psychosis: a cross-sectional and longitudinal MRI study. Biol Psychiatry 2007; 62: 773–783.
12. Siddiqi K, Zhang J, Macrini D, Shokoufandeh A, **Bouix** S, Dickinson SJ. Retrieving articulated 3-D models using medial surfaces. Mach Vis Appl 2008; 19: 261–275.
13. Kubicki M, Styner M, **Bouix** S, Gerig G, Markant D, Smith K, Kikinis R, McCarley RW, Shenton ME. Reduced interhemispheric connectivity in schizophrenia-tractography based segmentation of the corpus callosum. Schizophr Res 2008; 106: 125–131.
14. Lee K, Yoshida T, Kubicki M, **Bouix** S, Westin C-F, Kindlmann G, Niznikiewicz M, Cohen A, McCarley RW, Shenton ME. Increased diffusivity in superior temporal gyrus in patients with schizophrenia: a Diffusion Tensor Imaging study. Schizophr Res 2009; 108: 33–40.
15. Kawashima T, Nakamura M, **Bouix** S, Kubicki M, Salisbury DF, Westin C-F, McCarley RW, Shenton ME. Uncinate fasciculus abnormalities in recent onset schizophrenia and affective psychosis: a diffusion tensor imaging study. Schizophr Res 2009; 110: 119–126.
16. Levitt JJ, Styner M, Niethammer M, **Bouix** S, Koo M-S, Voglmaier MM, Dickey CC, Niznikiewicz MA, Kikinis R, McCarley RW, Shenton ME. Shape abnormalities of caudate nucleus in schizotypal personality disorder. Schizophr Res 2009; 110: 127–139.
17. Rathi Y**, Michailovich O, Shenton ME, **Bouix** S. Directional functions for orientation distribution estimation. Med Image Anal 2009; 13: 432–444.

18. Kubicki M, Niznikiewicz M, Connor E, Ungar L, Nestor P, **Bouix** S, Dreusicke M, Kikinis R, McCarley R, Shenton M. Relationship Between White Matter Integrity, Attention, and Memory in Schizophrenia: A Diffusion Tensor Imaging Study. Brain Imaging Behav 2009; 3: 191–201.
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