

C u r r i c u l u m V i t a e

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Name

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Education

1992-1998	B.Eng. Dean's List	Software Engineering	Institut Polytechnique de Sévenans, France.
1996-1998	M.Sc. Dean's List	Computer Science	University of Kansas.
1998-2003	Ph.D. Dean's List	Computer Science Advisor: K. Siddiqi	McGill University, Canada.

Postdoctoral Training

2003-2005	Research Fellow	Medical Image Analysis	Brigham and Women's Hospital. Advisor: M. E. Shenton
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Faculty Academic Appointments

2003-2005	Postdoctoral Fellow (Officer)	Harvard Medical School.
2005-2008	Instructor of Psychiatry	Harvard Medical School.
2008-	Assistant Professor of Psychiatry	Harvard Medical School.

Appointments at Hospital/Affiliated Institutions

2003-2005	Research Fellow	Laboratory of Neuroscience, Clinical Neuroscience Division, VA Boston Healthcare System, Brockton, MA.
2003-2005	Research Fellow	Surgical Planning Laboratory, MRI Division, Department of Radiology, Brigham and Women's Hospital.
2005-	Research Associate	Laboratory of Neuroscience, Clinical Neuroscience Division, VA Boston Healthcare System, Brockton, MA.
2005-	Research Associate	Psychiatry Neuroimaging Laboratory, Department of Psychiatry, Brigham and Women's Hospital.
2009-	Associate Director	Psychiatry Neuroimaging Laboratory, Department of Psychiatry, Brigham and Women's Hospital.

Professional Societies

- 2004- Medical Image Computing and Computer Assisted Intervention Member.
 2005- Institute of Electrical and Electronics Engineers Member.

Editorial Activities

Ad Hoc Reviewer

- NeuroImage.
 Medical Image Analysis.
 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.
 Image and Vision Computing.
 Computer Vision and Image Understanding
 International Journal of Pattern Recognition and Artificial Intelligence.
 Proceedings of the National Academy of Sciences.
 American Journal of Psychiatry.
 Neurobiology of Aging.
 International Conference on Medical Image Computing and Computer-Assisted Intervention.
 International Conference on Computer Vision and Pattern Recognition.
 IEEE Visualization.
 International Symposium on Biomedical Imaging.
 Brain Imaging and Behavior.

Other Editorial Roles

- 2005- Program Committee Canadian Conference on Computer and Robot Vision.
 2007- Program Committee International Conference on Computer Vision.
 2008 Organizing Committee Workshop on Brain Imaging, Mathematical Biosciences Institute,
 at the Ohio State University.
 2009- Program Committee MICCAI Workshop Probabilistic Models for Medical Image Analysis.
 2010- Program Committee MICCAI Workshop on Computational Diffusion MRI.
 Program Committee International Conference on Information Processing in Medical Imaging.

Honors and Prizes

- 1998 B.Eng. with Honors (Institut Polytechnique de Sévenans).
 1998 M.Sc., Faculty of Engineering Dean's Honors (University of Kansas).
 2001-2002 McGill Major, J.W. McConnell graduate student fellowship (\$10,000).
 2003 Ph.D., Faculty of Science Dean's Honors List (McGill University).

Report of Funded and Unfunded Projects

Funding Information

- 2003-2008 Postdoctoral Fellow - VA Merit Award
MR Brain diffusion tensor imaging in Schizophrenia.
 PI: Martha E. Shenton.
 2003-2007 Postdoctoral Fellow - NIMH R01 MH 40799
Neurophysiological Studies of Schizophrenia
 PI: Robert W. McCarley
 2004-2010 Investigator - U54 GM072977-01
National Alliance for Medical Imaging
 PI: Ron Kikinis
 2005-2010 Investigator - NIMH R01 MH 50740
Computerized Image Analyses of MR Scans in Schizophrenia.
 PI: Martha E. Shenton.

- 2006-2011 Investigator - VA Schizophrenia Center Grant
Neuroimaging Insights into Schizophrenia & Treatment Implications
PI: Robert W. McCarley & Martha E. Shenton.
- 2007-2012 Investigator - NIH/NIMH 1 P50 MH 080272
Vulnerability to Progression Schizophrenia.
PI: Robert W. McCarley.
- 2008-2011 Investigator - FIRCA R03 TW008134
MRI and Neurological Findings in Schizophrenia, ADHD, and Healthy Controls.
PI: Martha E. Shenton
- 2009-2012 **Principal Investigator** - Center for Integration of Medicine and Innovative Technology
Soldier in Medicine New Concept Award
Diagnosis of Diffuse Axonal Injury with Diffusion Tensor Imaging.
- 2009-2014 Investigator - VA Merit Award
MR Brain diffusion tensor imaging in Schizophrenia.
PI: Martha E. Shenton.
- 2009-2014 **Principal Investigator** - NIMH R01 MH 082918
Computational Morphometry in Schizophrenia and Related Disorders.
- 2008-2014 Investigator - W81XWH-07-CC-CS-DoD
The Harvard Clinical Defense Consortium (HCDC): PTSD/TBI Clinical Consortium.
PI: Martha Shenton, Ron Kikinis & Bruce Rosen.
- 2011-2014 Investigator - W81XWH-07-CC-CS-DoD
Modification of the neuroimaging leadership core to perform post processing MRI.
PI: Martha Shenton, Ron Kikinis & Bruce Rosen.
- 2011-2014 Investigator - W81XWH-07-CC-CS-DoD
A randomized clinical trial of Glyburide for TBI.
PI: Howard Eisenberg.
- 2012-2014 Investigator - W81XWH-07-CC-CS-DoD
The role of neuroinflammation in TBI using PET with [11C]-PK-11195.
PI: Martha Shenton & Emily Stern.
- 2011-2014 Investigator - CIMIT Innovation Grant
Diagnosis of diffuse axonal injury using robust tract-based quantification of diffusion tensor imaging.
PI: Lauren O' Donnell.
- 2014-2018 Investigator - VA Merit Award
Development of MR Biomarkers of brain Injury in Acute and Chronic mTBI.
PI: Martha Shenton.

Current Unfunded Projects

- 2014 Principal Investigator
Methods for Diagnosis and Prognosis of Mild Traumatic Brain Injuries.
One year award submitted to GE/NFL Head Health Challenge
- 2014-2016 Principal Investigator
Using Individual DTI Profiles of Mild TBI to Guide Targeted, Non-Invasive Brain Stimulation Intervention for Veterans with Persistent Post-Concussion Symptoms
Two year proposal submitted to Chronic Effects of Neurotrauma Consortium of the DoD.
- 2015-2017 Principal Investigator
Building MRI References to Analyze Heterogeneous Mild Brain Injuries.
Two year proposal submitted to DoD.

Report of Local Teaching and Training

Teaching of Students in Courses

- University of Kansas**
1997 *Introduction to the Theory of Computing*
Undergraduate level, Teaching Assistant, 3hrs per wk for 14 wks

McGill University

- 1999-2001 *Data Structures and Algorithms*
Undergraduate level, Teaching Assistant, 3hrs per wk for 14 wks
- 2001-2002 *Fundamentals of Computer Vision*
Undergraduate/Graduate level, Teaching Assistant, 3hrs per wk for 14 wks
- 2002 *Fundamentals of Computer Graphics*
Undergraduate/Graduate level, Teaching Assistant, 3hrs per wk for 14 wks

Harvard University

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

Massachusetts Institute of Technology

- 2009 *Biomedical Signal and Image Processing*
Graduate level, Guest Lecturer, 90 min. lecture

Harvard University

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

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

- 2008 *Neuroimaging Research in Schizophrenia*
Residents Harvard Longwood Psychiatry Residency Training Program One hour lecture
- 2009 *Population Studies with Diffusion Tensor Imaging*
Research Fellows Psychiatry Neuroimaging Laboratory weekly seminar (5 sessions)

Laboratory and Other Research Supervisory and Training Responsibilities

- 2005- Supervision of post-doctoral research fellows Daily mentorship
- 2005- Training of visiting research fellows Weekly mentorship
- 2007- Supervision of graduate students Daily mentorship of two students
- 2007- Supervision of a software engineer Daily mentorship of one engineer
- 2010- Mentor at MIT's Research Science Institute Daily mentorship of a high school junior in the summer

Formally Supervised Trainees

- 2005 Jacob Albertson - High School Student.
- 2005-2007 Marc Niethammer, Ph.D. - Postdoctoral Fellow.
Now Associate Professor at UNC Chapel Hill.
- 2005-2008 Katharina Quintus, M.Eng.- Software Engineer.
Now Software Engineer at Varian Medical Systems, Switzerland.
- 2005-2008 Kilian Pohl, Ph.D. - Graduate Student.
Now Assistant Professor at University of Pennsylvania.
- 2007-2008 JungSu Oh, Ph.D. - Postdoctoral Fellow.
Now Staff Physicist at ASAN Medical Center, Seoul, Korea.
- 2007 Francois Budin, M.Eng.- Graduate Student.
Now Research Engineer at UNC Chapel Hill.
- 2007-2010 Yogesh Rathi, Ph.D. - Postdoctoral Fellow.
Now Assistant Professor, Psychiatry Neuroimaging Lab, BWH, Harvard Medical School.
- 2008-2009 Julien de Siebenthal, Ph.D. - Research Engineer.
Now Lead Engineer, Visualization and Algorithms at Symbios Orthopdie, Switzerland.
- 2008-2012 Padmapriya Srinivasan - Research Assistant.
- 2008- Peter Savadjiev - Postdoctoral Fellow.
Now Instructor, Psychiatry Neuroimaging Lab, BWH, Harvard Medical School.
- 2009-2012 Paula Pelavin - Research Assistant.
- 2009- Ofer Pasternak - Postdoctoral Fellow.
Now Assistant Professor, Psychiatry Neuroimaging Lab, BWH, Harvard Medical School.
- 2010 Edward Vargas - High School Student attending the Research Science Institute at MIT.
Semi-finalist of Intel Talent Search high-school science competition.

- 2010-2013 Tamar Riklin Raviv - Postdoctoral Fellow.
Now Assistant Professor, Ben-Gurion University of the Negev, Israel.
- 2010-2013 Demian Wassermann - Postdoctoral Fellow.
- 2010- Ryan Eckbo - Research Engineer.
- 2011 Felipe Hernandez - High School Student attending the Research Science Institute at MIT.
- 2011-2013 Yi Gao - Postdoctoral Fellow.
Now Assistant Professor, University of Alabama, Birmingham.
- 2012 Sindy Tan - High School Student attending the Research Science Institute at MIT.
- 2013 Phoebe Cai - High School Student attending the Research Science Institute at MIT.

Local Invited Presentations

- 2004 *Hierarchical Atlas Based Segmentation* Seminar
Harvard Brockton VA Neuroscience Laboratory
- 2004 *Characterizing the Shape of Anatomical Structures with Poissons Equation* Journal Club
Surgical Planning Laboratory - BWH
- 2005 *Comparing Brain Tissue Classifiers* Seminar
Laboratory of Mathematics in Imaging - BWH
- 2005 *Comparing Brain Tissue Classifiers* Seminar
Harvard Brockton VA Neuroscience Laboratory
- 2006 *Validation of Automatic Brain Classifiers* Workshop presentation
National Alliance for Medical Image Computing All Hands Meeting

Report of Regional, National and International Invited Teaching and Presentations

Regional Contributions

Invited Teaching

- 2005 *Medical Image Analysis with Slicer* Training Seminar
Brain Imaging Lab., Dartmouth Medical Center
- 2006 *Slicer Training* One day training session
Brain Imaging Lab., Dartmouth Medical Center
- 2009 *Neuroimaging Population Studies* Lecture
Massachusetts Institute of Technology;
HST582 - Biomedical Signal and Image Processing

Invited Presentations

- 2003 *Medial Surfaces and Applications to Medical Imaging* Seminar
Medical Vision Group, Massachusetts Institute of Technology
- 2013 *Increased Diffusion Anisotropy in Gray Matter in Mild TBI* Seminar
Martinos Center, Massachusetts General Hospital.
- 2014 *Shape Analysis, Individualized Profiles of Injury, Robust Image Analysis* Seminar
Northeastern University.

National Contributions

Invited Presentations

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| 2003 | <i>Shape Analysis Using Medial Representations</i>
Medical Image Display and Analysis Group,
University of North Carolina, Chapel Hill. | Seminar |
| 2011 | <i>INjury and TRaumatic STress Consortium Neuroimaging Leadership Core</i>
Coma and Consciousness Symposium, Miami, FL. | Seminar |

International Contributions

Invited Teaching

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| 2007 | <i>Medical Image Analysis with Slicer</i>
Kangwon National University Hospital, Chuncheon, South Korea. | Three day training session |
| 2008 | <i>Hands On DTMRI Analysis with Slicer</i>
Centre for Addiction and Mental Health, University of Toronto, Canada | Two day training session |
| 2013 | <i>Introduction to Diffusion Tensor Image Processing</i>
Life and Health Sciences Research Institute, University of Minho, Portugal. | Two day training session |

Invited Presentations

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| 2004 | <i>Technical Challenges in Schizophrenia Research</i>
Center for Intelligent Machines, McGill University, Canada. | Seminar |
| 2006 | <i>Introduction to Medical Image Processing</i>
Life and Health Sciences Research Institute, University of Minho, Portugal. | Seminar |
| 2007 | <i>An Introduction to Neuroimaging Research in Schizophrenia</i>
Kangwon National University Hospital, Chuncheon, South Korea. | Seminar |
| 2007 | <i>Shape Analysis of Neuroanatomical Structure</i>
Hanyang University, Seoul, South Korea. | Seminar |
| 2008 | <i>Neuroimaging Research in Schizophrenia</i>
Centre for Addiction and Mental Health, University of Toronto, Canada. | Seminar |
| 2009 | <i>An Introduction to Neuroimaging Research in Schizophrenia</i>
School of Computer Science, McGill University, Montreal, Canada. | Seminar |

Report of Technological and Other Scientific Innovations

As a member of the National Alliance for Medical Image Computing, I have participated in the design, implementation and testing of 3D slicer (www.slicer.org), a free open source software suite for Medical Image Analysis. I was involved in the development of:

- a module to extract centerlines of tubular objects (application in virtual colonoscopy, endoscopy and lung image analysis).
- a module to segment MR images of the brain into different tissue classes.
- a module to semi-automatically realign brain images.
- a module to correct for imaging artifacts in Diffusion MR image acquisition.
- a module to reorient Diffusion Tensor Images.
- a module to perform group-wise registration of High Angular Resolution Diffusion Imaging data.
- testing procedures to ensure reliability of MR analysis measurements.

Report of Scholarship

(* = denotes past or present mentee/trainee)

(+ = denotes equal first authorship)

Original Articles

Peer-Reviewed Articles published in Journals

1. John M Gauch, Susan Gauch, Sylvain **Bouix** and Xiaolan Zhu, “Real time video scene detection and classification”, *Information processing and Management*, 35(3):381–400, 1999.
2. Kaleem Siddiqi, Sylvain **Bouix**, Allen Tannenbaum and Steven W Zucker, “Hamilton-jacobi skeletons”, *International Journal of Computer Vision*, 48(3):215–231, 2002.
3. Sylvain **Bouix**, Kaleem Siddiqi and Allen Tannenbaum, “Flux driven automatic centerline extraction”, *Medical Image Analysis*, 9(3):209–221, 2005.
4. Sylvain **Bouix**, Jens C Pruessner, D Louis Collins and Kaleem Siddiqi, “Hippocampal shape analysis using medial surfaces”, *Neuroimage*, 25(4):1077–1089, 2005.
5. Sylvain **Bouix** and Kaleem Siddiqi, “Optics, mechanics, and hamilton-jacobi skeletons”, *Advances in Imaging and Electron Physics*, 135:1–39, 2005.
6. Laura C Wiegand, Simon K Warfield, James J Levitt, Yoshio Hirayasu, Dean F Salisbury, Stephan Heckers, Sylvain **Bouix**, Daniel Schwartz, Magdalena Spencer, Chandlee C Dickey, Ron Kikinis, Ferenc A Jolesz, Robert W McCarley and Martha E Shenton, “An in vivo MRI study of prefrontal cortical complexity in first episode psychosis”, *American Journal of Psychiatry*, 162:65–70, 2005.
7. Haissam Haidar, Sylvain **Bouix**, James J Levitt, Robert W McCarley, Martha E Shenton and Janet S Soul, “Characterizing the shape of anatomical structures with Poisson’s equation”, *IEEE Transactions on Medical Imaging*, 25(10):1249–1257, 2006.
8. Min-Seong Koo, Chandlee C Dickey, Hae-Jeong Park, Marek Kubicki, Na Young Ji, Sylvain **Bouix**, Kilian M Pohl*, James J Levitt, Motoaki Nakamura, Martha E Shenton and Robert W McCarley, “Smaller neocortical gray matter and larger sulcal CSF volumes in neuroleptic-naive females with schizotypal personality disorder”, *Archives of General Psychiatry*, 63:1090–1100, 2006.
9. Sylvain **Bouix**, Marcos Martin-Fernandez, Lida Ungar, Motoaki Nakamura, Min-Seong Koo, Robert W McCarley and Martha E Shenton, “On evaluating brain tissue classifiers without a ground truth”, *Neuroimage*, 36(4):1207–1224, 2007.
10. Motoaki Nakamura, Dean F Salisbury, Yoshio Hirayasu, Sylvain **Bouix**, Kilian M Pohl*, Takeshi Yoshida, Min-Seong Koo, Martha E Shenton and Robert W McCarley, “Neocortical gray matter volume in first episode schizophrenia and first episode affective psychosis: a cross-sectional and longitudinal MRI study”, *Biological Psychiatry*, 62(7):773–783, 2007.
11. Kilian M Pohl*, John Fisher, Sylvain **Bouix**, Martha Shenton, Robert W McCarley, W Eric L Grimson, Ron Kikinis and William M Wells, “Using the logarithm of odds to define a vector space on probabilistic atlases”, *Medical Image Analysis*, 11(5):465–477, 2007.
12. Kilian M Pohl*, Sylvain **Bouix**, Motoaki Nakamura, Torsten Rohlfing, Robert W McCarley, Ron Kikinis, W Eric L Grimson, Martha E Shenton and William M Wells, “A hierarchical algorithm for MR brain image parcellation”, *IEEE Transactions on Medical Imaging*, 26(9):1201–1212, 2007.
13. M Kubicki, M Styner, S **Bouix**, G Gerig, D Markant, K Smith, R Kikinis, RW McCarley and ME Shenton, “Reduced interhemispheric connectivity in schizophrenia - tractography based segmentation of the corpus callosum”, *Schizophrenia Research*, 106(2):125–131, 2008.
14. Kaleem Siddiqi, Juan Zhang, Diego Macrini, Ali Shokoufandeh, Sylvain **Bouix** and Sven Dickinson, “Retrieving articulated 3-D models using medial surfaces”, *Machine Vision and Applications*, 19(4):261–275, 2008.
15. KangUk Lee, Takeshi Yoshida, Marek Kubicki, Sylvain **Bouix**, Carl-Fredrik Westin, Gordon Kindlmann, Margaret Niznikiewicz, Adam Cohen, Robert W McCarley and Martha E Shenton, “Increased diffusivity in superior temporal gyrus in schizophrenia a diffusion tensor imaging study”, *Schizophrenia Research*, 108(1):33–40, 2009.
16. James J Levitt, Martin Styner, Marc Niethammer*, Sylvain **Bouix**, Min-Seong Koo, Martina M Voglmaier, Chandlee C Dickey, Margaret A Niznikiewicz, Ron Kikinis, Robert W McCarley and Martha E Shenton, “Shape abnormalities of caudate nucleus in schizotypal personality disorder”, *Schizophrenia Research*, 110(1-3):127–139, 2009.

17. Toshiro Kawashima, Motoaki Nakamura, Sylvain **Bouix**, Marek Kubicki, Dean F Salisbury, Carl-Fredrik Westin, Robert W McCarley and Martha E Shenton, “Uncinate fasciculus abnormalities in recent onset schizophrenia and affective psychosis: A diffusion tensor imaging study”, *Schizophrenia Research*, 110:119–126, 2009.
18. Yogesh Rathi*, Oleg Michailovich, Martha E Shenton and Sylvain **Bouix**, “Directional functions for orientation distribution estimation”, *Medical Image Analysis*, 13(3):432–444, 2009.
19. Marek Kubicki, Margaret Niznikiewicz, Elizabeth Connor, Paul Nestor, Sylvain **Bouix**, Mark Dreusicke, Ron Kikinis, Robert McCarley and Martha Shenton, “Relationship between white matter integrity, attention, and memory in schizophrenia: A diffusion tensor imaging study”, *Brain, Imaging and Behavior*, 3(2):191–201, 2009.
20. Takeshi Yoshida, Robert W McCarley, Motoaki Nakamura, KangUk Lee, Min-Seong Koo, Sylvain **Bouix**, Dean F Salisbury, Lindsay Morra, Martha E Shenton and Margaret A Niznikiewicz, “A prospective longitudinal volumetric MRI study of superior temporal gyrus gray matter and amygdala-hippocampal complex in chronic schizophrenia”, *Schizophrenia Research*, 113(1):84–94, 2009.
21. Jungsu S Oh*, Marek Kubicki, Gudrun Rosenberger, Sylvain **Bouix**, James J Levitt, Robert W McCarley, Carl-Fredrik Westin and Martha E Shenton, “Thalamo-frontal white matter alterations in chronic schizophrenia: A quantitative diffusion tractography study”, *Human Brain Mapping*, 30(11):3812–3825, 2009.
22. Yogesh Rathi*, James G Malcolm, Sylvain **Bouix**, Allen R Tannenbaum and Martha E Shenton, “Affine registration of label maps in label space”, *Journal of Computing*, 2(4):1–11, 2010.
23. James G Malcolm, Oleg Michailovich, Sylvain **Bouix**, Carl-Fredrik Westin, Martha E Shenton and Yogesh Rathi*, “A filtered approach to neural tractography using the Watson directional function”, *Medical Image Analysis*, 14(1):58–69, 2010.
24. Peter Savadjiev, Gordon L Kindlmann, Sylvain **Bouix**, Martha E Shenton and Carl-Fredrik Westin, “Local White Matter Geometry from Diffusion Tensor Gradients”, *Neuroimage*, 49(4):3175–3186, 2010.
25. A Sampaio, S **Bouix**, N Sousa, M Prieto, C Vasconcelos and M Shenton, “Morphometry and connectivity of corpus callosum in williams syndrome: Indexes of neural development”, *International Journal of Developmental Neuroscience*, 28(8):716, 2010.
26. Aristotle N Voineskos, Nancy J Lobaugh, Sylvain **Bouix**, Tarek K Rajji, Dielle Miranda, James L Kennedy, Benoit H Mulsant, Bruce G Pollock and Martha E Shenton, “Diffusion tensor tractography findings in schizophrenia across the adult lifespan”, *Brain*, 133(5):1494–1504, 2010.
27. Yogesh Rathi*, James G Malcolm, Oleg Michailovich, Carl-Fredrik Westin, Martha E Shenton and Sylvain **Bouix**, “Tensor-kernels for simultaneous fiber model estimation and tractography”, *Magnetic Resonance in Medicine*, 64(1):138–148, 2010.
28. Andriy Fedorov, Xiaoxing Li, Kilian M Pohl*, Sylvain **Bouix**, Martin Styner, Merideth Addicott, Chris Wyatt, James B Daunais, William M Wells and Ron Kikinis, “Atlas-guided segmentation of vervet monkey brain mri”, *Open Neuroimaging Journal*, 5:186–197, 2011.
29. Marek Kubicki, Jorge L Alvarado, Carl-Fredrik Westin, David F Tate, Douglas Markant, Douglas P Terry, Thomas J Whitford, Julien De Siebenthal, Sylvain **Bouix**, Robert W McCarley, Ron Kikinis and Martha E Shenton, “Stochastic tractography study of inferior frontal gyrus anatomical connectivity in schizophrenia”, *Neuroimage*, 2011.
30. TJ Whitford, DH Mathalon, ME Shenton, BJ Roach, R Bammer, RA Adcock, S **Bouix**, M Kubicki, J De Siebenthal, AC Rausch et al., “Electrophysiological and diffusion tensor imaging evidence of delayed corollary discharges in patients with schizophrenia”, *Psychol Med*, 22:1–11, 2011.
31. Yogesh Rathi*, Marek Kubicki, Sylvain **Bouix**, Carl-Fredrik Westin, Jill Goldstein, Larry Seidman, Raquelle Meshulam-Gately, Robert W McCarley and Martha E Shenton, “Statistical analysis of fiber bundles using multi-tensor tractography: application to first-episode schizophrenia”, *Magnetic Resonance Imaging*, 29(4):507–515, 2011.
32. Eric D Melonakos, Martha E Shenton, Yogesh Rathi*, Douglas P Terry, Sylvain **Bouix** and Marek Kubicki, “Voxel-based morphometry (VBM) studies in schizophreniacan white matter changes be reliably detected with vbm?”, *Psychiatry Research: Neuroimaging*, 193:65–70, 2011.
33. Thomas J Whitford, Peter Savadjiev, Marek Kubicki, Lauren J O’Donnell, Douglas P Terry, Sylvain **Bouix**, Carl-Fredrik Westin, Jason S Schneiderman, Laurel Bobrow, Andrew C Rausch, Margaret Niznikiewicz, Paul G Nestor, Christos Pantelis, Stephen J Wood, Robert W McCarley and Martha E Shenton, “Fiber geometry in the corpus callosum in schizophrenia: Evidence for transcallosal misconnection”, *Schizophrenia Research*, 132(1):69–74, 2011.

34. Takeshi Asami, Sylvain **Bouix**, Thomas J Whitford, Martha E Shenton, Dean F Salisbury and Robert W McCarley, “Longitudinal loss of gray matter volume in patients with first-episode schizophrenia: DARTEL automated analysis and ROI validation”, *Neuroimage*, 59(2):986–996, 2012.
35. Yi Gao*, Ron Kikinis, Sylvain **Bouix**, Martha Shenton and Allen Tannenbaum, “A 3D interactive multi-object segmentation tool using local robust statistics driven active contours”, *Medical image analysis*, 16(6):1216–1227, August 2012.
36. Yi Gao*, Zhuo Li, Ziyin Lin, Liangjia Zhu, Allen Tannenbaum, Sylvain **Bouix** and C P Wong, “Automated dispersion and orientation analysis for carbon nanotube reinforced polymer composites”, *Nanotechnology*, 23(43):435706, 2012.
37. Yi Gao*, Yogesh Rathi*, Sylvain **Bouix** and Allen Tannenbaum, “Filtering in the diffeomorphism group and the registration of point sets”, *IEEE transactions on image processing: a publication of the IEEE Signal Processing Society*, 21(10):4383–4396, 2012.
38. Gudrun Rosenberger, Paul G Nestor, Jungsu S Oh*, James J Levitt, Gordon Kindleman, Sylvain **Bouix**, Jennifer Fitzsimmons, Margaret Niznikiewicz, Carl-Fredrik Westin, Ron Kikinis, Robert W McCarley, Martha E Shenton and Marek Kubicki, “Anterior limb of the internal capsule in schizophrenia: a diffusion tensor tractography study”, *Brain Imaging Behav.*, 2012.
39. M.E. Shenton, H.M. Hamoda, J.S. Schneiderman, **S. Bouix**, O. *Pasternak, Y. *Rathi, M.A. Vu, M.P. Purohit, K. Helmer, I. Koerte, A.P. Lin, C.-F. Westin, R. Kikinis, M. Kubicki, R.A. Stern and R. Zafonte, “A review of magnetic resonance imaging and diffusion tensor imaging findings in mild traumatic brain injury”, *Brain Imaging Behav.*, 6(2):137–192, 2012.
40. Z Kikinis, T Asami, **S Bouix**, CT Finn, T Ballinger, E Tworog-Dube, R Kucherlapati, R Kikinis, ME Shenton and M Kubicki, “Reduced fractional anisotropy and axial diffusivity in white matter in 22q11.2 deletion syndrome: A pilot study”, *Schizophrenia Research*, 141(1):35–9, 2012.
41. Inga K Koerte, David Kaufmann, Elisabeth Hartl, Sylvain **Bouix**, Ofer Pasternak*, Marek Kubicki, Alexander Rauscher, David K B Li, Shiroy B Dadachanji, Jack A Taunton, Lorie A Forwell, Andrew M Johnson, Paul S Echlin and Martha E Shenton, “A prospective study of physician-observed concussion during a varsity university hockey season: white matter integrity in ice hockey players. part 3 of 4”, *Neurosurgical focus*, 33(6):E3, 2012.
42. Takeshi Asami, Thomas J Whitford, Sylvain **Bouix**, Chandlee C Dickey, Margaret Niznikiewicz, Martha E Shenton, Martina M Voglmaier and Robert W McCarley, “Globally and locally reduced MRI gray matter volumes in neuroleptic-naïve men with schizotypal personality disorder: association with negative symptoms”, *JAMA psychiatry (Chicago, Ill.)*, 70(4):361–372, 2013.
43. Adriana Sampaio+, Sylvain **Bouix**+, Nuno Sousa, Cristiana Vasconcelos, Montse Frnandez, Martha E Shenton and Oscar F Goncalves, “Morphometry of corpus callosum in williams syndrome: shape as an index of neural development”, *Brain structure & function*, 218:711–720, 2013.
44. Sylvain **Bouix**+, Ofer Pasternak+, Yogesh Rathi*, Paula E Pelavin, Ross Zafonte and Martha E Shenton, “Increased gray matter diffusion anisotropy in patients with persistent post-concussive symptoms following mild traumatic brain injury”, *PloS one*, 8(6):e66205, 2013.
45. Yi Gao*, Sylvain **Bouix**, Martha Shenton and Allen Tannenbaum, “Sparse texture active contour”, *Image Processing, IEEE Transactions on*, 22(10):3866–3878, 2013.
46. Zora Kikinis, Nikos Makris, Christine T Finn, Sylvain **Bouix**, Diandra Lucia, Michael J Coleman, Erica Tworog-Dube, Ron Kikinis, Raju Kucherlapati, Martha E Shenton et al., “Genetic contributions to changes of fiber tracts of ventral visual stream in 22q11. 2 deletion syndrome”, *Brain imaging and behavior*, 7(3):316–325.
47. Ofer Pasternak*, Inga K. Koerte, Sylvain **Bouix**, Eli Fredman, Takeshi Sasaki, Michael Mayinger, Karl G. Helmer, Andrew M. Johnson, Jeffrey D. Holmes, Lorie A. Forwell, Elaine N. Skopelja, Martha E. Shenton and Paul S. Echlin, “Hockey concussion education project, part 2. microstructural white matter alterations in acutely concussed ice hockey players: a longitudinal free-water MRI study.”, *J Neurosurg*, 120(4):873–881, 2014.
48. Takeshi Sasaki, Ofer Pasternak*, Michael Mayinger, Marc Muehlmann, Peter Savadjiev, Sylvain **Bouix**, Marek Kubicki, Eli Fredman, Brian Dahlben, Karl G. Helmer, Andrew M. Johnson, Jeffrey D. Holmes, Lorie A. Forwell, Elaine N. Skopelja, Martha E. Shenton, Paul S. Echlin and Inga K. Koerte, “Hockey concussion education project, part 3. white matter microstructure in ice hockey players with a history of concussion: a diffusion tensor imaging study.”, *J Neurosurg*, 120(4):882–890, 2014.
49. P Savadjiev, TJ Whitford, ME Hough, C Clemm von Hohenberg, **S Bouix**, C-F Westin, ME Shenton, TJ Crow, AC James and M Kubicki, “Sexually dimorphic white matter geometry abnormalities in adolescent

onset schizophrenia”, *Cerebral Cortex*, In Press.

50. Y. Rathi*, O. Pasternak, P. Savadjiev, O. Michailovich, S. **Bouix**, M. Kubicki, C.-F. Westin, N. Makris and M. E. Shenton, “Gray matter alterations in early aging: A diffusion magnetic resonance imaging study.”, *Hum Brain Mapp*, In Press.
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Narrative Report

Upon obtaining my Ph.D. in Computer Science from McGill University in 2003, I accepted a two year position as a post-doctoral fellow in the Surgical Planning Laboratory (SPL) at Brigham and Women’s Hospital (BWH), to work with Prof. Martha E. Shenton on neuroimaging studies in schizophrenia. I am now Assistant Professor and Associate Director of the Psychiatry Neuroimaging Laboratory, headed by Prof. Shenton, at BWH. I serve as the technical leader in this interdisciplinary team of computer scientists, software engineers, and medical investigators. Our central theme of research is the study of brain disorders via magnetic resonance imaging (MRI), in particular schizophrenia and traumatic brain injury (TBI). One important aspect of my position is to serve as a bridge between computer scientists and neuroscientists. I facilitate the design, testing, and deployment of new image analysis algorithms and promote their use to neuroscientists. Having been exposed to so many different aspects of neuroimaging research, my interests have greatly broadened since I received my Ph.D. and I now have a comprehensive perspective on the field of medical imaging and on the practical needs of neuroscientists with respect to imaging tools. My expertise ranges from applied mathematics and theoretical computer science to the development of robust and practical software for medical image analysis. My research efforts are supported by the National Institute of Health, the Department of Defense, and the Department of Veterans Affairs.

Our laboratory has been involved in a number of consortiums and through these research projects, I have established a number of collaborations locally (e.g., MIT, Boston University, Mass General Hospital), nationally (e.g. UNC Chapel Hill, Stony Brook University, University of Iowa, San Antonio Military Medical Center), and internationally (e.g., University of Minho in Portugal, Ludwig-Maximilians-University in Germany, University of British Columbia in Canada). I am equally comfortable interacting with mathematicians or medical doctors and strive in a multidisciplinary environment. In fact, I am particularly interested in the interplay between disciplines, where theory drives applications and applications influence theory development.

The overarching theme of my research is to improve and design image analysis tools to help neuroscientists solve problems in a wide variety of applications. I have applied my expertise in the design and robust implementation of algorithms in topics including image segmentation, validation of segmentation algorithms without a ground truth, or processing of dMRI images. Further, I have pursued in-depth research activities in the field of computational morphometry, with a particular focus on the evaluation of shape analysis tools. The algorithms I have developed have been applied in studies of schizophrenia, Williams syndrome, and temporal lobe epilepsy. Finally, the laboratory recent interest in studying TBI have posed special challenges and enabled new research activities, in particular the design of subject-specific profiles of brain injuries. I have been concentrating on detecting abnormalities in a single patient by building a normative atlas and then testing each individual patient against this atlas. This early design of Subject-Specific Profiles of Brain Injury was able to detect abnormalities not observed using conventional tools.