Department of Mathematics
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Jadrian Miles, PhD

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Education

Ph.D. in Computer Science, Brown University. 2015
Dissertation: "A Multi-Scale Model of Brain White-Matter Structure and Its Fitting Method for Diffusion MRI". Committee: David H. Laidlaw (advisor), Peter J. Basser (NIH), John F. Hughes, and Benjamin J. Raphael.

Sc.M. in Computer Science, Brown University. 2008

B.S. with Distinction in Computer Science, **B.S.** in Mathematics, Duke University. 2006

Publications and Presentations

Journal Papers

- A. Gongvatana, R. Cohen, S. Correia, K.N. Devlin, J. Miles, H. Kang, H. Ombao, B. Navia, D.H. Laidlaw, and K.T. Tashima. "Clinical Contributors to Cerebral White Matter Integrity in HIV-Infected Individuals". *Journal of Neurovirology*, 17(5):477–486, 2011.
- R. Boller, S.A. Braun, J. Miles, and D.H. Laidlaw. "Application of Uncertainty Visualization Methods to Meteorological Trajectories". *Earth Science Informatics*, 3(1–2):119–126, June 2010.
- D.F. Keefe, D. Acevedo, J. Miles, F. Drury, S.M. Swartz, and D.H. Laidlaw. "Scientific Sketching for Collaborative VR Visualization Design". *IEEE Transactions on Visualization and Computer Graphics*, 14(4):835–847, Jul–Aug 2008.

Refereed Posters, Workshops, and Invited Talks

- J. Miles and D.H. Laidlaw. "Predicting DTI Tractography Uncertainty from Diffusion-Weighted-Image Noise". Poster at ISMRM 2012.
- R. Boller, S. Braun, J. Miles, and D. Laidlaw. "Application of Uncertainty Visualization Methods to Meteorological Trajectories". NASA Earth and Space Science Informatics Workshop, University of Maryland, Baltimore County. August 2009.
- J. Miles. "A Specialized Inter-Curve Similarity Measure for Agglomerative Diffusion MRI Streamline Clustering". Invited talk at the Section on Tissue Biophysics and Biomimetics, National Institutes of Health. May 2009.
- J. Miles, R.A. Cohen, and D.H. Laidlaw. "Tradeoffs in Supersampling of DTI Metrics". Poster at ISMRM 2009.
- J. Miles, D.F. Keefe, D. Acevedo, F. Drury, S.M. Swartz, and D.H. Laidlaw. "Teaching Science in Virtual Reality with a Freehand 3D Illustration". Poster at IEEE InfoVis 2007.

Instructional Workshops

- J. Miles. "Regular Expressions, Text Processing, and Web Scraping", a two-hour tutorial at The Humanities and Technology Camp (New England) at Brown University. October 2012.
- J. Miles. "Fibbly Math Patterns", a one-hour classroom workshop for elementary- and middle-school–age students. Facilitated ten sessions total in Damariscotta, ME and Philadelphia, PA. November 2011 – January 2013.
- A. Gongvatana, J. Miles. "Diffusion MRI: Theory and Practice", a three-hour workshop in the Biostatistics Program, Department of Public Health, Brown University. October 2010.

Professional Experience

Teaching

Phillips Academy, Andover, MA 2015–2016
Instructor in Department of Mathematics, Statistics, and Computer Science
- Taught AP CS (3 sections), Software Design, Computer Graphics, and Data Structures (2 sections).
- Designed the Graphics course from scratch: a bottom-up approach in Python/Numpy and WebGL.
- Advised two teams, of three students each, on independent projects: "PACTF" and Combinatorial Optimization.
- Co-instructed the outdoor learning program, Outdoor Pursuits, for two trimesters.

Carleton College, Northfield, MN 2013–2015
Visiting Instructor in Computer Science Department
- Taught Intro (2x), Data Structures (2x), Math of CS (2x), Algorithms (3x), and Software Design (1x).
- Designed and taught an elective on medical image analysis. Significantly redesigned Data Structures.
- Managed undergraduate graders for most courses.
- Advised five students as research assistants for two trimesters.
- Advised three teams, of six students each, on two-trimester senior capstone projects.
- Academic advisor for fourteen majors.

Brown University, Providence, RI 2008, 2013
Instructor in Computer Science Department
- Taught Intro to Computation for the Humanities and Social Sciences and managed a staff of undergraduate TAs. 2013

Teaching Assistant in Computer Science Department
- TA'd Virtual Reality Design for Scientific Visualization, including extensive virtual reality software support. 2008

Professional Experience, continued

Teaching, continued

New Urban Arts, Providence, RI 2009–2011
Academic mentor in math and science to high-school art students.

Duke University, Durham, NC 2004–2006
Undergraduate Teaching Assistant in Computer Science Department
- TA'd Software Design, Graphics, Numerical Analysis (grad-level), and Discrete Math. Taught one lecture for Graphics.

Software Engineering & Research

Brown University, Providence, RI 2006–2015
Graduate Researcher in Computer Science Department
- Developed a mixed discrete/continuous model of brain-tissue structure, and algorithms to fit it to MRI data.
- Collaborated across disciplines with scientists in Providence, RI; St. Louis, MO; Edinburgh; and Cape Town.
- Made frequent presentations, including over 25 one-hour talks given to my research group and others.

Google, Inc., Cambridge, MA 2011
Intern in Software Engineering
- Back-end design, development, and deployment of a customer-facing user interface for latency analytics. 2011

Avid Technology, Inc., Tewksbury, MA 2000–2008
Intern in Software Engineering, Software Quality Assurance, and Training Departments
- Research and development of algorithms for video deinterlacing (machine learning), scene reconstruction (computer vision), and cryptographic steganography. 2008, 2006, 2003
- Video codec evaluation; development of in-house codec testing workflow software. 2004
- Migration of full corporate code base to Visual Studio .net compiler; software refactoring & optimization. 2003
- Software quality assurance; network and hardware construction and maintenance. 2002

Service

Reviewer for *IEEE Visualization* and *IEEE Transactions on Visualization and Computer Graphics*.

Carleton College, Northfield, MN 2013–2015
- Faculty reviewer of sophomore writing portfolios. 2014
- Interviewer for Digital Humanities postdoctoral candidates. 2014
- Interviewer for Goldwater Scholarship candidates. 2014

Providence Public School Department, Providence, RI 2012
- Invited Evaluator of student demonstrations for Expanded Learning Opportunities.

Brown University, Providence, RI 2006–2010
- Member, CS Graduate Student Committee for PhD Admissions. 2011
- Technical Officer, Brown Graduate Student Council. 2008, 2010
- CS Department Representative, Brown Graduate Student Council. 2006–2009
- Organizer, CS Graduate Student Committee for Faculty Search. 2008
- Organizer, CS Graduate Student Recruitment. 2007, 2008

Duke University, Durham, NC 2005–2006
- President, Duke University Chapter of the Association for Computing Machinery. 2006
- Member, Student Advisory Committee to the Office of the Dean of Students. 2006
- DJ, WXDU. 2005–2006