

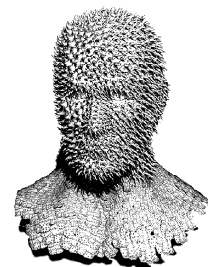
# David H. Laidlaw

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Box 1910, Department of Computer Science  
Providence, RI 02912

401-863-7647

email: [dhl@cs.brown.edu](mailto:dhl@cs.brown.edu)  
<http://www.cs.brown.edu/~dhl>



## Research

**Overview** Interdisciplinary research into robust and effective computer science and visualization tools to solve problems in biology, fluids, medical imaging, archaeology, geology, geography, and other disciplines. Collaborative work with colleagues in these areas guides the research and provides a mechanism for evaluating the usefulness and robustness of results.

**Education** Ph.D., Computer Science, California Institute of Technology, 1995.

*Geometric Model Extraction from Magnetic Resonance Volume Data*

Researched biological applications of computer graphics. Created new computer graphics modeling and animation techniques that collect better magnetic resonance imaging (MRI) data, classify or segment sampled volume data, volume render, and animate extracted models .

M.S., Computer Science, California Institute of Technology, 1992.

*Material Classification of Magnetic Resonance Volume Data*

Sc.M., Computer Science, Brown University, 1985.

*Rendering Parametric Surfaces*

Sc.B., Computer Science, Brown University, *summa cum laude*, honors in Math, 1983.

*Topology and Mechanics*, Honors thesis (film)

**Experience** **Professor, Brown University**, 2008 to present.

**Associate Professor, Brown University**, 2003 to 2008.

**Stephen Robert Assistant Professor, Brown University**, 2000 to 2003.

**Assistant Professor, Brown University**, 1998 to 2000.

Specific research projects include visualization of vector-valued and tensor-valued volume data, acquiring images of blood pressure measurements and of water diffusion tensor measurements using magnetic resonance, development of geometric tools for archaeology, simulation of human joint dynamics, and visualization of computer programs.

**Senior Research Fellow, California Institute of Technology**, 1996 to 1998.

Research focussed on quantitative biological and medical imaging and image processing, modeling biological systems, and scientific visualization. Responsible for creating a research plan, raising funds, executing the plan, and directing and supervising students and staff.

**Postdoc/Grad. Research Assistant, California Institute of Technology, 1989 to 1996.**

Research focused on extracting computer graphics models of animals and plants from 3-D MRI data. Participated in fund-raising and site reviews for the HBP and the distributed NSF Science and Technology Center for Computer Graphics and Scientific Visualization. Achieved research goals from the two projects, including developing tissue classification algorithms, visualizing MRI data, and placing organic textures on geometric models.

**Consultant, Stardent/Advanced Visual Systems, 1989 to 1993.**

Consulted on design and implementation strategies for Application Visualization System (AVS) scientific visualization software. Implemented new CAD/CAM finite element functionality. Worked with customers to improve their animation and modeling applications.

**Software Engineer, Stellar Computer, 1986 to 1989.**

Designed, prototyped, and implemented AVS. As first member of the graphics software team at Stellar, helped recruit and build the group, and coordinate with the graphics hardware group. Developed and implemented graphics software architecture for the Stellar graphics supercomputer.

**Research Assistant, Brown University, 1983 to 1985.**

**Consultant, Basel Institute for Immunology, Switzerland, Summer 1984.**

**Teaching Assistant, Brown University, 1983.**

**Programmer, Johns Hopkins University, 1980 to 1982.**

**Honors**

2015 Honorable Mention Paper at IEEE VAST/VIS 2015

2013 Named IEEE Fellow

2012 Best Note Honorable Mention at ACM CHI

2010 Best Poster award at IEEE Visualization

2008 IEEE VGTC Visualization Technical Achievement Award

Capstone speaker at IEEE Visualization Conference

Best poster award Nomination, Annual Meeting of International Society for Magnetic Resonance in Medicine

2007 1st Place, NSF/Science International Science & Engineering Visualization Challenge, Informational Graphics, with student Misha Kostandov and several other collaborators

2006 SIGGRAPH, ACM Student Research Competition, 1st place with PhD student Wenjin Zhou

Outstanding Poster Award at 10th International Conference on Alzheimer's Disease – Imaging Consortium

- 2005 Best Poster award at IEEE Visualization  
SIGGRAPH, ACM Student Research Competition, 2nd place with PhD student Daniel Keefe
- 2004 Best Panel award at IEEE Visualization
- 2003 Henry Merritt Wriston Teaching Fellowship
- 2002 *Computers & Graphics* Second Best Paper Award
- 2001 [Best Case Study award at IEEE Visualization](#)  
Best Layout and Best Scientific Presentation Exhibit Award at the American Society for Surgery of the Hand Annual Meeting  
Awarded NSF CAREER Grant
- 2000 Appointed Stephen Robert Assistant Professor
- 1998 Best Panel award at IEEE Visualization
- 1989 Earl C. Anthony Graduate Fellowship
- 1984 Raster Tech Image Contest  
elected to Sigma Xi

**Journal and  
SIGGRAPH**

- Papers**
- 98. Kernel regression estimation of fiber orientation mixtures in diffusion mri. Ryan Cabeen, Mark E Bastin, and David H. Laidlaw. *NeuroImage*, 127:158–172, 2016. ([bibtex: Cabeen-2015-KRE](#)).
  - 97. Permutation and parametric tests for effect sizes in voxel-based morphometry of grey matter volume in brain structural mri. David Alexander Dickie, Shadia Mikhael, Dominic E. Job, Joanna M. Wardlaw, David H. Laidlaw, and Mark Bastin. In *Magnetic Resonance Imaging*, 2015. ([bibtex: Dickie-2015-PPT](#)).
  - 96. A case study using visualization interaction logs and insight metrics to understand how analysts arrive at insights. Hua Guo, Steven R. Gomez, Caroline Ziemkiewicz, and David H. Laidlaw. In *Proceedings of IEEE VAST*, 2015. ([pdf](#)) ([bibtex: Guo-2015-CSU](#)).
  - 95. Representing uncertainty in graph edges: An evaluation of paired visual variables. Hua Guo, Jeff Huang, and David H. Laidlaw. *IEEE Transactions on Visualization and Computer Graphics*, 2015. ([pdf](#)) ([bibtex: Guo-2015-RUG](#)).
  - 94. In vivo recruitment patterns in the anterior oblique and dorsoradial ligaments of the first carpometacarpal joint. Eni Halilaj, Michael J. Rainbow, Douglas Moore, David H. Laidlaw, Arnold-Peter C. Weiss, Amy L. Ladd, and jcrisco. *Journal of Biomechanics*, 2015. published ([bibtex: Halilaj-2015-RPA](#)).

93. The articular morphology of the first carpometacarpal joint does not differ between men and women, but changes with aging and early osteoarthritis. Eni Halilaj, Douglas Moore, David H. Laidlaw, Christopher J. Got, Amy L. Ladd, Arnold-Peter C. Weiss, and Jerisco. *Journal of Biomechanics*, pages Vol.47(11): pp 2709–14, 2015. published ([bibtex: Halilaj-2015-OAW](#)).
92. Magi: visualization and collaborative annotation of genomic aberrations. Mark D.M. Leiserson, Connor Gramazio, Jason Hu, Hsin-Ta Wu, David H. Laidlaw, and Benjamin J. Raphael. *Nature Methods*, 12(6):483–484, 2015. ([pdf](#)) ([bibtex: Leiserson-2015-MVC](#)).
91. Imaging signatures of meningioma and low-grade glioma: a diffusion tensor, magnetization transfer and quantitative longitudinal relaxation time MRI study. Rory J. Piper, Shadia Mikhael, Joanna M. Wardlaw, David H. Laidlaw, Ian R. Whittle, , and Mark E. Bastin. *Magnetic Resonance Imaging*, 2015. ([pdf](#)) ([bibtex: Piper-2015-ISM](#)).
90. Genetic markers of cholesterol transport and gray matter diffusion: A preliminary study of the *cebp* i405v polymorphism. Lauren E. Salminen, Peter R. Schofield, Kerrie D. Pierce, Thomas E. Conturo, David H. Laidlaw, Ryan Cabeen, Elizabeth M. Lane, Jodi M. Heaps, Jacob D. Bolzenius, Laurie M. Baker, Xi Luo, Erbil Akbudak, and Robert H. Paul. *Journal of Neural Transmission*, pages 1–12, August 2015. ([bibtex: Salminen-2015-GMC](#)).
89. Neuromarkers of the common angiotensinogen polymorphism in healthy older adults: A comprehensive assessment of white matter integrity and cognition. Lauren Salminen, Peter Schofield, Kerrie Pierce, Yi Zhao, Xi Luo, Youdan Wang, David H. Laidlaw, Ryan Cabeen, Thomas Conturo, David Tate, Erbil Akbudak, Elizabeth Lane, Jodi Heaps, Jacob Bolzenius, Laurie Baker, Lee Cagle, and Robert Paul. *Behavioural Brain Research*, August 2015. ([bibtex: Salminen-2015-NCA](#)).
88. Regional age differences in gray matter diffusivity among healthy older adults. Lauren E. Salminen, Thomas Conturo, David H. Laidlaw, Ryan Cabeen, Erbil Akbudak, Elizabeth Lane, Jodi Heaps, Jacob Bolzenius, Laurie Baker, Sarah Cooley, Staci Scott, Lee Cagle, Sarah Phillips, and Robert H. Paul. *Brain Imaging and Behavior*, April 2015.
87. White matter changes with age utilizing quantitative diffusion mri. Laurie M. Baker, David H. Laidlaw, Thomas E. Conturo, Joseph Hogan, Yi Zhao, Xi Luo, Stephen Correia, Ryan Cabeen, Elizabeth M. Lane, Jodi M. Heaps, Jacob Bolzenius, Lauren E. Salminen, Erbil Akbudak, Amanda R. McMichael, Christina Usher, Ashley Behrman, and Robert H. Paul. *Neurology*, June 2014. ([pdf](#)) ([bibtex: Baker-2014-WMC](#)).
86. Fiber bundle length and cognition: A length-based tractography mri study. Ashley M. Behrman, Christina Usher, Thomas E. Conturo, Stephen Correia, David H. Laidlaw, Elizabeth M. Lane, Jacob Bolzenius, Jodi M. Heaps, Lauren E. Salminen, Laurie M. Baker, Ryan Cabeen, Erbil Akbudak, Xi Luo, Peisi Yan, and Robert H. Paul. *Brain Imaging and Behavior*, 2014. ([pdf](#)) ([bibtex: Behrman-2014-FBL](#)).
85. Brain structure and cognitive correlates of body mass index in healthy older adults. Jacob D. Bolzenius, David H. Laidlaw, Ryan Cabeen, Thomas E. Conturo, Amanda R. McMichael, Elizabeth M. Lane, Jodi M. Heaps, Lauren E. Salminen, Laurie M. Baker, Staci E. Scott, Sarah A. Cooley, John Gunstad, and Robert H. Paul. *Behavioral Brain Research*, 2014. ([pdf](#)) ([bibtex: Bolzenius-2014-BSC](#)).

84. Posterior brain white matter abnormalities in older adults with probable mild cognitive impairment. Sarah A. Cooley, Ryan Cabeen, David H. Laidlaw, Elizabeth M. Lane, Jodi M. Heaps, Jacob D. Bolzenius, Laurie M. Baker, Lauren E. Salminen, Staci E. Scott, and Robert H. Paul. *Journal of Clinical and Experimental Neuropsychology*, 2014. ([pdf](#)) ([bibtex: Cooley-2014-PBW](#)).
83. Visual embedding: A model for visualization. Cagatay Demiralp, Carlos E Scheiddeger, Gordon L Kindlmann, David H. Laidlaw, and Jeffrey Heer. *IEEE Computer Graphics and Applications*, 20(1), January 2014. ([bibtex: Demiralp-2014-VEM](#)).
82. The relation between visualization size, grouping, and user performance. Connor Gramazio, Karen B. Schloss, and David H. Laidlaw. In *IEEE Transactions on Visualization and Computer Graphics*, volume 20, pages 1953–1962, 2014. ([pdf](#)) ([bibtex: Gramazio-2014-RVS](#)).
81. The articular morphology of the first caprometacarpal joint does not differ between men and women, but changes with aging and early osteoarthritis. Eni Halilaj, Douglas Moore, David H. Laidlaw, Christopher J. Got, Amy L. Ladd, Arnold-Peter C. Weiss, and jcrisco. *Journal of Biomechanics*, page Vol.47(11): pp 270914, 2014. published ([bibtex: Halilaj-2014-JOB](#)).
80. Polar histograms of curvature for quantifying skeletal joint shape and congruence. Eni Halilaj, David H. Laidlaw, Douglas Moore, and jcrisco. *Journal of Biomechanical Engineering*, pages 136(9), 094503, 2014. published ([bibtex: Halilaj-2014-JBE](#)).
79. Variation and genetic control of gene expression in primary immunocytes across inbred mouse strains. Sara Mostafavi, Adriana Ortiz-Lopez, Molly A Bogue, Kimie Hattori, Cristina Pop, Daphne Koller, Diane Mathis, Christophe Benoist, David A Blair, Michael L Dustin, David H. Laidlaw, et al. *The Journal of Immunology*, 193(9):4485–4496, 2014. ([bibtex: Mostafavi-2014-VGC](#)).
78. Impact of body mass index on neuronal fiber bundle lengths among healthy older adults. Jacob D. Bolzenius, David H. Laidlaw, Ryan Cabeen, Thomas E. Conturo, Amanda R. McMichael, Elizabeth M. Lane, Jodi M. Heaps, Lauren E. Salminen, Laurie M. Baker, John Gunstad, and Robert H. Paul. *Brain Imaging and Behavior*, 2013. ([bibtex: Bolzenius-2013-IBM](#)).
77. Composing DTI visualizations with end-user programming. Haipeng Cai, Jian Chen, Alexander P. Auchus, and David H. Laidlaw. *arXiv preprint arXiv:1310.2923*, 2013.
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study. Radu Jianu and David H. Laidlaw. *BMC research notes*, 6(1):1–14, 2013. (bibtex: [Jianu-2013-WGM](#)).

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72. The transcriptional landscape of alpha beta t cell differentiation. M Mingueneau, T Kreslavsky, D Gray, T Heng, R Cruse, J Ericson, S Bendall, M H Spitzer, G P Nolan, K Kobayashi, H Boehmer, D Mathis, C Benoist, A J Best, J Knell, A Goldrath, V Jojic, D Koller, T Shay, A Regev, N Cohen, P Brennan, M Brenner, F Kim, T N Rao, A Wagers, K Rothamel, A Ortiz-Lopez, N A Bezman, J C Sun, G Min-Oo, C C Kim, L L Lanier, J Miller, B Brown, M Merad, E L Gautier, C Jakubzick, G J Randolph, P Monach, D A Blair, M L Dustin, S A Shinton, R R Hardy, David H. Laidlaw, J Collins, R Gazit, D J Rossi, N Malhotra, K Sylvia, J Kang, A Fletcher, K Elpek, A Bellemare-Pelletier, D Malhotra, and S Turley. *Nature Immunology*, 14:619–632, 2013. (bibtex: [Mingueneau-2013-TLA](#)).

71. Neuronal fiber bundle lengths in healthy adult carriers of the ApoE4 allele: A quantitative tractography DTI study. Lauren E. Salminen, Peter R. Schofield, Elizabeth M. Lane, Jodi M. Heaps, Kerrie D. Pierce, Ryan Cabeen, David H. Laidlaw, Erbil Akbudak, Thomas E. Conturo, Stephen Correia, , and Robert H. Paul. *Brain Imaging and Behavior*, 7(3):274–281, September 2013. (bibtex: [Salminen-2013-NFB](#)).

70. Effects of coloring schema on 3d tube visualization of brain dmri tractography. Keqin Wu, Jian Chen, Steven R. Gomez, Alexander P. Auchus, and David H. Laidlaw. In *IEEE Transactions on Visualization and Computer Graphics (Proc. SciVis)*, 2013. In Review (pdf) (bibtex: [Wu-2013-ECS](#)).

69. The effects of seeding resolution on diffusion tensor imaging streamtube visualization comprehension. Jian Chen, H. Cai, David H. Laidlaw, and A. P. Auchus. In *Alzheimer's & Dementia*, volume 8, page P59, 2012. (bibtex: [Chen-2012-ESR](#)).

68. Effects of stereo and screen size on the legibility of three-dimensional streamtube visualization. Jian Chen, H. Cai, A. P. Auchus, and David H. Laidlaw. In *IEEE Transactions on*



*Visualization and Computer Graphics (Proc. IEEE SciVis)*, volume 18, pages 2130–2139, 2012. ([bibtex: Chen-2012-ESS](#)).

67. Gene-expression profiles and transcriptional regulatory pathways that underlie the identity and diversity of mouse tissue macrophages. Emmanuel L Gautier, Tal Shay, Jennifer Miller, Melanie Greter, Claudia Jakubzick, Stoyan Ivanov, Julie Helft, Andrew Chow, Kutlu G Elpek, Simon Gordonov, Amin R Mazloom, Avi Ma’ayan, Wei-Jen Chua, Ted H Hansen, Shannon J Turley, Miriam Merad, Gwendalyn J Randolph, The Immunological Genome Consortium, David H. Laidlaw, and Radu Jianu. *Nature Immunology*, 13:1118–1128, 2012. ([bibtex: Gautier-2012-GPT](#)).

66. Different strokes for different folks: Visual presentation design between disciplines. Steven R. Gomez, Radu Jianu, Caroline Ziemkiewicz, Hua Guo, and David H. Laidlaw. In *IEEE Transactions on Visualization and Computer Graphics (Proc. InfoVis)*, volume 18, pages 2411–2420, 2012. ([pdf](#)) ([bibtex: Gomez-2012-DSD](#)).

65. Transcriptional profiling of stroma from inflamed and resting lymph nodes defines immunological hallmarks. D Malhotra, Anne L Fletcher, J Astarita, V Lukacs-Kornek, P Tayalia, SF Gonzalez, KG Elpek, SK Chang, K Knoblich, ME Hemler, MB Brenner, MC Carroll, DJ Mooney, SJ Turley, The Immunological Genome Project Consortium the, Y Zhou, SA Shinton, RR Hardy, NA Bezman, JC Sun, CC Kim, LL Lanier, J Miller, M Merad, AL Fletcher, A Bellemare-Pelletier, K Narayan, K Sylvia, J Kang, R Gazit, B Garrison, DJ Rossi, V Jovic, D Koller, Radu Jianu, David H. Laidlaw, J Costello, J Collins, N Cohen, P Brennan, T Shay, A Regev, F Kim, TN Rao, A Wagers, EL Gautier, C Jakubzick, GJ Randolph, P Monach, AJ Best, J Knell, A Goldrath, T Heng, T Kreslavsky, M Painter, D Mathis, and C Benoist. *Nature Immunology*, 2012. ([bibtex: Malhotra-2012-TPS](#)).

64. Deciphering the transcriptional network of the dendritic cell lineage. Jennifer C Miller, Brian D Brown, Tal Shay, Emmanuel L Gautier, Vladimir Jovic, Ariella Cohain, Gaurav Pandey, Marylene Leboeuf, Kutlu G Elpek, Julie Helft, Daigo Hashimoto, Andrew Chow, Jeremy Price, Melanie Greter, Milena Bogunovic, Angelique Bellemare-Pelletier, Paul S Frenette, Gwendalyn J Randolph, Shannon J Turley, Miriam Merad, The Immunological Genome Consortium, David H. Laidlaw, and Radu Jianu. *Nature Immunology*, 13:888–899, 2008. ([bibtex: Miller-2012-DTN](#)).

63. Elongation of the dorsal carpal ligaments: A computational study of in vivo carpal kinematics. Michael J. Rainbow, Joseph J. Crisco, Douglas Moore, Robin N. Kamal, David H. Laidlaw, Edward Akelman, and Scott W. Wolfe. *The Journal of Hand Surgery*, 2012. ([bibtex: Rainbow-2012-EDC](#)).

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61. Exploring brain connectivity with two-dimensional neural maps. Radu Jianu, Cagatay Demiralp, and David H. Laidlaw. *IEEE TVCG*, 2011. ([pdf](#)) ([bibtex: Jianu-2011-EBJ](#)).

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- Immunological Genome Project Consortium, David H. Laidlaw, and Radu Jianu. *Journal of Immunology*, 186(5):3047–3057, 2011. ([bibtex: Painter-2011-TBT](#)).
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11. Reducing errors due to partial-volume effects and noise in pressure maps calculated for MR velocity data. Marco DaSilva, David H. Laidlaw, and J. Michael Tyszka. In *Proc. 8th International Society for MR in Medicine*, April 2000. ([bibtex: DaSilva-2000-RED](#)).
10. Visualization needs more visual design! Sensory design issues as a driving problem for visualization research. J. Edward Swan, Victoria Interrante, David H. Laidlaw, Theresa-Marie Rhyne, and Tamara Munzner. In *Proceedings of IEEE Visualization Conference*, pages 485–490, San Francisco, California, 1999. ([pdf](#)) ([bibtex: Swan-1999-VNM](#)).
9. Evaluating effects of diffusion weighting choice on accuracy of diffusion tensor MRI of fixed mouse spinal cord. David H. Laidlaw, Kristen L. Cook, and Yuri M. Goldfeld. In *Proc. 7th International Society for MR in Medicine, Poster Session*, May 1999. ([pdf](#)) ([bibtex: Laidlaw-1999-EED](#)).
8. A demonstration of errors in relative pressure calculations for MR velocity data. David H. Laidlaw and J. Michael Tyszka. In *Proc. 7th International Society for MR in Medicine*, May 1999. ([pdf](#)) ([bibtex: Laidlaw-1999-DER](#)).
7. Investigating white matter diffusion anisotropy using the desmyelinating shiverer mutant mouse. Eric T. Ahrens, David H. Laidlaw, Carol Readhead, and Scott E. Fraser. In *Proc. 7th International Society for MR in Medicine*, May 1999. ([bibtex: Laidlaw-1999-IWM](#)).
6. Goal-directed optimization of magnetic resonance imaging. David H. Laidlaw, Eric T. Ahrens, Matthew J. Avalos, Mark D. Montague, Alan H. Barr, Russell E. Jacobs, and Scott E. Fraser. In *Neuroscience Abstracts*, November 1998. ([bibtex: Laidlaw-1998-GOM](#)).
5. Panel: Art and visualization: Oil and water? David H. Laidlaw, davidkremers, Felice Frankel, Victoria Interrante, and Thomas F. Banchoff. In *Proceedings of IEEE Visualization Conference*, pages 507–509, Research Triangle Park, North Carolina, October 18 - 23 1998. ([pdf](#)) ([bibtex: Laidlaw-1998-AVO](#)).
4. Visually representing multi-valued scientific data using concepts from oil painting. David H. Laidlaw, davidkremers, Eric T. Ahrens, and Matthew J. Avalos. In *SIG-GRAPH '98 Visual Proceedings (sketch)*, page 249, August 1998. ([pdf](#)) ([bibtex: Laidlaw-1998-VRM](#)).
3. Evaluating numerical methods for blood pressure MRI. David H. Laidlaw and J. Michael Tyszka. In *Laverna Titus Young Investigators forum*, May 1998. ([bibtex: Laidlaw-1998-ENM](#)).
2. Three-dimensional space-time structure of turbulent jets. Jerry W. Shan, David H. Laidlaw, Galen G. Gornowicz, Daniel B. Lang, and Paul E. Dimotakis. In *Proc. DFD97 Meeting of the American Physical Society*, November 1997. ([bibtex: Shan-1997-TSS](#)).
1. Bayesian mixture classification of MRI data for geometric modeling and visualization. David H. Laidlaw. In *abstract and poster for International Workshop on Mixtures*, September 1995. ([bibtex: Laidlaw-1995-BMC](#)).

- Popular Press**
13. Symmetric bat flight, Kosara and Robert. July 2008. ([pdf](#)) ([bibtex: Kosara-2008-SBF](#)).
  12. Daniel keefe, cavepainter, Jen Grey. ACM SIGGRAPH Arts, October 2007. ([pdf](#)) ([bibtex: Grey-2007-DKC](#)).
  11. Drawing on air with haptics in 3D, Roland Piquepaille. Slashdot.com, September 2007. ([pdf](#)) ([bibtex: Piquepaille-2007-DAH](#)).
  10. New tech lets you draw in the air, Tracy Staedter. Discovery News, October 2007. ([pdf](#)) ([bibtex: Staedter-2007-NTL](#)).
  9. CSers develop new 3D design tool, Haydar Taygun. Brown Daily Herald, October 2007. ([pdf](#)) ([bibtex: Taygun-2007-CDN](#)).
  8. Artists draw on air to create 3D illustrations, Zyga. Online magazine PHYSORG.com, 2007. ([pdf](#)) ([bibtex: Zyga-2007-ADA](#)).
  7. Not your typical new magazine: Brown university s chaise is printed on a dvd disc, Bill Van Siclen. Providence Journal Arts Section, February 2004. ([pdf](#)) ([bibtex: Siclen-2004-NYT](#)).
  6. Nugget for NSF: ITR collaborative: Perceptual optimization for data visualization, Colin Ware, Don House, David H. Laidlaw, and Jeffrey Proehl. Submitted to NSF, January 2004. ([pdf](#)) ([bibtex: Ware-2004-NUG](#)).
  5. Faculty forum: Teaching innovations,, Catherine Dube, David H. Laidlaw, and Thompson Webb III. In The Teaching Exchange, Brown University, January 2003. ([pdf](#)) ([bibtex: Dube-2003-FFT](#)).
  4. Random samples: Painterly data. Constance Holden. *Science Magazine*, 298(5594):739, October 2002. ([pdf](#)) ([bibtex: Holden-2002-RSA](#)).
  3. Brown-risd course unites two disciplines, two institutions. Elizabeth Miller. *George Street Journal*, 27, November 2002. ([pdf](#)) ([bibtex: Miller-2002-BRC](#)).
  2. Virtual da vinci. Kathy Walker. *Shift Magazine*, 10(2), May 2002. ([pdf](#)) ([bibtex: Walker-2002-VDV](#)).
  1. The virtual voyager. Paroma Basu. *The MIT Technology Review*, September 2001. ([pdf](#)) ([bibtex: Basu-2001-TVV](#)).

- Other Publications**
7. *Guest Editors' Introduction: Special Section on Volume Graphics and Point-Based Graphics, IEEE TVCG 16(4)*. Hans-Christian Hege, David H. Laidlaw, and Raghu Machiraju. IEEE, 2009,. ([bibtex: Hege-2010-VGP](#)).
  6. Modeling the flight of a bat. David J. Willis, Mykhaylo Kostandov, Daniel K. Riskin, Jaime Peraire, David H. Laidlaw, Sharon Swartz, and Kenneth S. Breuer. *Science Magazine. 2007 Visualization Challenge Winner. Informational Graphics.*, 317:1860, September 2007. ([bibtex: Willis-2007-MFB](#)).
  5. Faculty forum: Teaching innovations,, Catherine Dube, David H. Laidlaw, and Thompson Webb III. In The Teaching Exchange, Brown University, January 2003. ([pdf](#)) ([bibtex: Dube-2003-FFT](#)).

4. Nonphotorealistic rendering in scientific visualization. Christopher G. Healey, Victoria Interrante, davidkremers, David H. Laidlaw, and Penny Rheingans. In *Course Notes of SIGGRAPH 2001*, volume Course 32, August 2001. ([pdf](#)) ([bibtex: Healey-2001-NRS](#)).
3. Applying concepts from oil painting and art to visualization. David H. Laidlaw. *Sidebar in IEEE Computer Graphics and Applications*, January 2000. ([bibtex: Laidlaw-2000-ACO](#)).
2. *Geometric Model Extraction from Magnetic Resonance Volume Data*. David H. Laidlaw. PhD thesis, California Institute of Technology, 1995. ([pdf](#)) ([bibtex: Laidlaw-1995-GME](#)).
1. Computer graphics and the geometry of  $S^3$ . Huseyin Kocak and David H. Laidlaw. *The Mathematical Intelligencer*, 9(1):8–10, 1987. ([bibtex: Kocak-1987-CGG](#)).

### Invited Lectures/Presentations

- 2011 Dagstuhl seminar on multivalued data, “What Summarizes a Diffusion MRI Dataset? (to a medical researcher)”, December
- Purdue, Samuel D. Conte Distinguished Lecture, “The Ultimate Visualization Display”, November
- IEEE VisWeek Conference, October
- 2010 University of New Hampshire, “A Show and Tell of Visualization Research at Brown”, with Cagatay Demiralp and Radu Jianu
- Diffusion MRI of Traumatic Brain Injury (TBI) Roadmap Workshop, Chicago, June, “We’ve got the solution! So, what’s your problem? Roadblocks to clinical use of diffusion MRI for TBI”
- Aptima, June, “A Theory of Scientific and Information Visualization: 10+50 Years in the Making”
- 2009 Tensor Dagstuhl, Germany, June
- Illustravis Workshop, Bergen Norway, June
- Visualization Dagstuhl, Germany, May
- 2008 IEEE Visualization Capstone, October
- Stowers Institute for Medical Research, October
- RISD Teaching Symposium, April
- Mississippi State University, March
- 2007 Washington University, St. Louis, November
- IEEE Visualization Conference, October

- Visualization Dagstuhl, May
- Tensor Dagstuhl, January
- 2006 IEEE Visualization Conference, October
- 2005 Joint Greater Boston ACM and IEEE Seminar, December
- Physical Chemistry Seminar, Brown, November
- Biostatistics Seminar, Brown, November
- IEEE Visualization Conference, October
- Dagstuhl, June
- Dynamic Data-Driven Application Systems Workshop, International Conference on Computational Science, Atlanta, May
- National Academy of Engineering, German American Frontiers of Engineering Symposium, Potsdam, May
- VRVis Seminar, Vienna, May
- Image and Meaning II Conference, Los Angeles, June
- Visual Analytics Panel, AAAS, Washington DC, February
- 2004 IEEE Visualization Conference, October
- Brown CS 25th Anniversary, May
- University of Kaiserslautern, April
- Dagstuhl Diffusion Imaging and Visualization Symposium, April
- Wayland Collegium, March
- Winter Conference on Brain Research, January
- 2003 SIAM Geometry Conference, November
- Imaging 2020 Conference, September
- Dagstuhl Visualization Symposium, June
- Princeton University, May
- Siemens Corporate Research, May
- 2002 University of New Hampshire, October
- Fraunhofer Center for Research in Computer Graphics (CRCG), February

- 2001 Carnegie Mellon University, November
- Brown Inauguration, October
- MIT Image and Meaning Conference, June
- University of Edinburgh, April
- 2000 NIH Diffusion Tensor Magnetic Resonance Imaging Conference, December
- 1998 NSF Conference on Computing in the Life Sciences, Pomona College, April
- Naval Research Lab, May
- Brown University Computer Science, April
- University of Southern California, April
- 1997 NSF Science and Technology Center for Computer Graphics and Visualization, January
- 1996 Human Brain Project Annual Meeting, NIH, May
- University of Washington, April
- 1995 Human Brain Project Annual Meeting, NIH, May
- 1988 Naval Underwater Systems Center, Newport, RI
- Seattle local IEEE meeting
- 1985 Apple Computer

**Films and**

**Videos** “Bearly Growing,” with the Caltech Graphics Group, Siggraph Video Review, August, 1995.

“Fruit Tracing,” with the Caltech Graphics Group, Siggraph Electronic Theater, August, 1993.

“[The Hypersphere: Foliations and Projections](#),” with Thomas Banchoff, Hüseyin Koçak, Frederic Bisshopp and David Margolis, Siggraph Animation Screening, 1985; Siggraph Video Review, 1986; Siggraph Art Show, 1986; also shown at numerous mathematics conferences.

“Topology and Mechanics: Flows on the Torus,” with Thomas Banchoff, Hüseyin Koçak and Frederic Bisshopp, Honors Thesis, Brown University, December, 1983.

“Topology and Mechanics: Linear Oscillators and the Hypersphere,” with Thomas Banchoff, Hüseyin Koçak, Frederic Bisshopp and David Margolis, Honors Thesis, Brown University, December, 1983.



**Images** “Bee MRI Data,” “Inside a Bee,” “Inside the Human Hand 2,” “Human Hand Montage,” “Lobster MRI Data,” with Matthew J. Avalos, Russell E. Jacobs, Kurt W. Fleischer, and Alan H. Barr, Siggraph Technical Slide Set, 1994; in *Scientific Visualization: The New Eyes of Science*, by Christopher W. Baker, Millbrook Press, Brookfield, CT, 2000.

“Visualization of 2D Velocity, Vorticity, Deformation Rate Tensor, and Turbulent Sources,” with R. Michael Kirby and H. Marmanis; Siggraph Technical Slide Set, 1998; cover of Visualization ’99 Conference Proceedings, 1999; *Computer Graphics and Applications*, Jan/Feb ’00.

“Mouse Spinal Cord Diffusion Tensor Visualization Using Concepts from Painting,” with David Kremers, Eric T. Ahrens, Matthew J. Avalos, and Carol Readhead; Siggraph Technical Slide Set, 1998; cover of Visualization ’98 Conference Proceedings, 1998; MIT Image and Meaning Conference Exhibition, ’01; CIRCA Art Magazine, Autumn 2001, pp 36-37.

“6-Valued MR Image Data Portrayed with Concepts from Painting,” with David Kremers, Eric T. Ahrens, and Matthew J. Avalos, Siggraph Technical Slide Set, 1998.

“Second-order Diffusion Tensor Field Magnetic Resonance Imaging,” with Eric T. Ahrens, Carol Readhead, Celia F. Brosnan, and Scott E. Fraser, Siggraph Technical Slide Set, 1997.

“Goal-directed Linear Combinations of Multi-Valued Magnetic Resonance Data,” with Alan H. Barr and Russell E. Jacobs, Siggraph Technical Slide Set, 1997, *Science*, 278(5342), 1997.

“Volume Rendered Locust,” with Matthew J. Avalos, Siggraph Technical Slide Set, 1996.

“Thorny Man,” with Kurt W. Fleischer, Bena L. Currin, and Alan H. Barr, cover of Siggraph Proceedings, 1995; Siggraph Art Show, 1995; Siggraph Technical Slide Set, 1995.

“Thornballs,” and “Scaled Spheres,” with Kurt W. Fleischer, Bena L. Currin, and Alan H. Barr, Siggraph Technical Slide Set, 1995.

“Human Molar Geometry Derived From MRI,” with Pratik R. Ghosh, Kurt W. Fleischer, Alan H. Barr, and Russell E. Jacobs, Siggraph Technical Slide Set, 1995.

“Human Hand,” “Peeling Banana,” “Volume Rendered Jade Plant,” “Computationally Stained Brain Slice,” and “Computationally Stained Brain Slice 2,” with Matthew J. Avalos, David B. Kirk, John Snyder, Adam R. Woodbury and Alan H. Barr, Siggraph Technical Slide Set, 1992.

“Sphere and Hypersphere,” with Hüseyin Koçak , cover for *Mathematical Intelligencer*, 9(1), 1987; Szymanski, *Introduction to Computers*, Merrill Publishing Co., Columbus, 1988.

“Color Choreography,” with Barbara J. Meier, 2nd place, student category, Raster Technologies Image Contest, 1986; permanent collection, Boston Computer Museum, since 1986; Siggraph Technical Slide Set, 1986; cover for *Brown University Directory of Science and Engineering Research*, 1987; Szymanski, *Introduction to Computers*, Merrill Publishing

Co., Columbus, 1988; Szymanski, *Computers and Application Software*, Merrill Publishing Co., Columbus, 1988; Foley, et al, *Computer Graphics, Principles and Practice*, Addison-Wesley, 1992.

“Tubes within Tubes,” with Hüseyin Koçak, Siggraph Art Show, 1986; Szymanski, *Computers and Application Software*, Merrill Publishing Co., Columbus, 1988.

“Inside the Hypersphere,” with Hüseyin Koçak, cover for *Mathematical Intelligencer*, 8(3), 1986; Adage Annual Report, 1987; *The Mathematical Tourist*, Ivars Peterson, W. H. Freeman and Co., New York, 1988, 96.

“Example of Computer Animation,” with Hüseyin Koçak, in *Introduction to Computers and Information Systems*, Thomas H. Athey, Scott Foresman and Co., Glenview IL, 1986.

“The Pedal Surface of a Quartic Curve,” “Focal Surfaces of the Ellipsoid,” with Thomas Banchoff and David Margolis, NY Siggraph Art Expo, 1985; Siggraph Technical Slide Set, 1985; *ID: Magazine of International Design*, 32(1), January-February, 1985, 69.

“Flows on the Torus,” with Thomas Banchoff, Hüseyin Koçak, Frederic Bisshopp and David Margolis, *Scientific American*, September, 1984, 158; *Newsweek*, December 17, 1984, 87; *The Christian Science Monitor*, March 5, 1985, 25; *Veja*, March 6, 1985, 55; NY Siggraph Art Expo, 1985; *Computing Horizons*, Tony Durham, Addison Wesley, New York, 1988, 182; *I Frattali la Geometria Dell’irregolare*, Istituto Della Encyclopedia Italiana, 1988, 35.

“Cyclides of Dupin,” with Thomas Banchoff, Hüseyin Koçak, Frederic Bisshopp and David Margolis, record jacket for “Letters to a Friend,” and “Adman’s Dream,” I Start Counting, Mute Records, London, 1984; book jacket for *The Fourth Dimension: Towards a Geometry of Higher Reality*, Rudy Rucker, Houghton Mifflin, New York, 1984; *ID: Magazine of International Design*, 32(1), January-February, 1985, 71; cover of *Understanding Computers*, Time-Life Books, New York, 1987; *Recent Revolutions in Mathematics*, Albert Stwertka, Franklin Watts, New York, 1987, 92-93; *The Mathematical Tourist*, Ivars Peterson, W. H. Freeman and Co., New York, 1988, 96.

“Swallowtail Catastrophe,” “Figure Eight Klein Bottle,” “Focal Surfaces of the Ellipsoid,” “Veronese Surface,” with Thomas Banchoff, *Perspectives in Mathematics, Anniversary of Oberwolfach 1984*, Birkhäuser, Boston, 1984, 43-60.

“Nautilus,” with David Margolis and Thomas Banchoff, Evans & Sutherland Calendar, 1984.

“Sinusoidal Surface,” with Thomas Banchoff and David Margolis, cover for *Calculus with Analytic Geometry*, M. A. Munem and D. J. Foulis, Worth Publishers Inc., New York, 1984.

“World in Perspective,” with Thomas Banchoff, cover for John Hancock Annual Report, 1984.

“Infinite Torus,” with Thomas Banchoff, Hüseyin Koçak and Frederic Bisshopp, cover for *Sunday Journal Magazine*, Providence Journal, October 14, 1984.

“Veronese Surface and a Polyhedral Model,” with Thomas Banchoff and David Salesin, cover for *Mathematical Intelligencer*, 5(3), 1983.

**Research Grants and Contracts** “Immersive Visualization and 3D Interaction for Volume Data Analysis,” ~\$250K, PI on collaborative NSF award with Doug Bowman, August 2013 – July 2016.

“Adaptive Agents for Real-time Data-driven Visualization & Analysis for Relevant Knowledge (AARDVARK),” ~\$100K, PI on followon subcontract to ONR SBIR Contract to Aptima, Inc., November 2012 – Feb 2014.

“Adaptive Agents for Real-time Data-driven Visualization & Analysis for Relevant Knowledge (AARDVARK),” \$25K, PI on subcontract to ONR SBIR Phase I Contract to Aptima, Inc., December 2010 – June 2011.

“Supporting Knowledge Discovery through a Scientific Visualization Language,” \$262K, PI (collaborative), NSF IIS-10-16623 November 2010 – October 2014

“Thumb CMC Biomechanics and Early OA Progression,” PI on subcontract to NIH award, JJ Crisco PI at RIH.

“MRI: Development of a Next-Generation Interactive Virtual-Reality Display Environment for Science,” \$2M, PI NSF OCI-09-23393, September 2009 – September 2015

“Neuropathogenesis of clade C HIV in South Africa,” \$2M, PI NSF OCI-09-23393, \$506K of \$3.1M, PI on subcontract to NIH award 1R01MH085604-01A2, July 2009 – June 2015

“ImmGen: a gene expression compendium for immune cells,” \$673K of \$2M, subcontract to NIH R24 Award AI072073-01A1, September 2007 – August 2011

“Bat Wing Structure and the Aerodynamic Mechanisms of Flapping Flight”, Co-PI (Sharon Swartz PI), NSF IOS-0702392, \$280K, September 2007 – August 2010

“Age Effects on HIV associated Brain Dysfunction,” PI on subcontract from Miriam Hospital to Brown, NIH , \$100K of \$1.4M, October 2006 – September 2010.

“A Proposal to Design and Build a Dynamic 3-D Skeletal Imaging System,” Co-PI (Beth Brainerd PI), William M. Keck Foundation, \$1.8M, January 2007 – January 2010.

“IDBR: Hardware and Software Development for 3D Visualization of Rapid Skeletal Motion in Vertebrate Animals,” Co-PI, (Beth Brainerd, PI), NSF Award DBI-05-52051, \$345K. June 2006 – May 2009.

“3-D Multi-Articular Models of the Carpus,” PI on subcontract from Rhode Island Hospital to Brown, NIH, \$450K of \$2M, April 2006 – February 2009.

“High-speed X-ray Imaging Facility for Musculoskeletal Biomechanics Research” Co-PI (Beth Brainerd, PI) Brown Research Seed Funding, \$100K, January 2006 – December 2006.

“MRI+DTI-Based Tools for Analyzing White Matter Variation”, PI, NIH Award EB4155A1, \$2M. October 2005 – July 2009.

“DDDAS-TMRP Interactive Data-driven Flow-simulation Parameter Refinement for Understanding the Evolution of Bat Flight”, PI, NSF Award CCR-0540266, \$100K, January 2006 – December 2006.

“Acquisition of a 3T MRI System”, Co-PI, NSF Award BCS-0521432, \$2M, September 2005 – August 2006.

Metrics for Quantifying White Matter Variation: Image Analysis, Testing, and Application, PI, Brown Research Seed Funding, \$100K, January 2005 – January 2006.

“ITR: Computational simulation, modeling, and visualization for understanding unsteady bioflows,” PI, NSF Award CNS-0427374, \$650K, October 2004 – September 2009.

Aerodynamic mechanisms of bat flight: an integrated multidisciplinary approach, Co-PI (Sharon Swartz, PI), Brown Salomon Award, \$20K, 2004.

“ITR Collaborative Research: Perceptual Optimization for Data Visualization,” PI, NSF Award CCR-0324306, \$104K, September 2003 – August 2006.

“CAREER: Shape Capture and Modeling for Wrist Dynamics and Ancient Pottery Analysis using Manifold Surfaces and Signed-Distance Volume Images,” PI, NSF CAREER Award CCR-0093238, \$324K, March 2001 – February 2007.

“Normal and Abnormal In Vivo Carpal Bone Motion,” PI on subcontract from Rhode Island Hospital to Brown, NIH AR44005, \$650K of \$2.4M, April 2001 – February 2006.

“ITR: Visualization of Multi-valued Scientific Data: Applying Ideas from Art and Perceptual Psychology,” PI, NSF Award CCR-0086065, \$2,296,599 September 2000 – August 2004.

“Visualization for Software Understanding,” NSF Award ACI-9982266, Co-PI, (Steve Reiss, PI), \$559,212, October 1999 – September 2002.

“3D Free-Form Models for Geometric Recovery and Application to Archaeology,” NSF Award BCS-9980091, Co-PI (David Cooper, PI) \$1,370,870, September 1999 – January 2003.

“Multi-valued MRI Acquisition, Visualization, and Dissemination,” PI on subcontract from Caltech to Brown, Human Brain Project, \$400K of \$4M, October 1998 – September 2003.

“Computer Graphics Tools for Understanding Tensor-Valued Volume Data: A Painting Metaphor,” PI, NSF CCR-9619649, \$140K, March 1997 – February 2001.

## Professional Service

2015 Program Committee, IEEE SciVis 2015

- Program Committee, Eurovis 2015
- Reviewing for numerous journals and conferences
- 2014 Conference Chair, IEEE SciVis 2014
- NIH grant reviewing
- Reviewing for numerous journals and conferences
- 2013 Papers Co-Chair, IEEE Visualization 2013
- Conference Chair, IEEE SciVis 2014
- Program Committee, Eurovis 2013
- Reviewing for numerous journals and conferences
- NSF Review Panel
- Other grant reviewing
- 2012 Papers Co-Chair, IEEE Visualization 2013
- Program Committee, Eurovis 2013
- Reviewing for IEEE Transactions on Visualization and Computer Graphics, IEEE SciVis, IEEE Information Visualization, IEEE VAST, PLOS
- Technical advising for Iowa State Virtual Reality Application Center (VRAC) and for University of North Carolina Chapel Hill Computer Integrated Systems for Microscopy and Manipulation (CISMM) Center.
- 2011 Conference Chair, IEEE Visweek 2011
- Papers Co-Chair, IEEE Visualization 2012
- Program Committee, Eurovis 2012
- Reviewing for IEEE Transactions on Visualization and Computer Graphics, IEEE Visualization, IEEE Information Visualization, IEEE VAST, ACM Computer Graphics and Applications
- Grant Proposal Reviewing for Qatar
- 2010 Conference Chair, IEEE Visweek 2011
- Reviewing for IEEE Transactions on Visualization and Computer Graphics, IEEE Visualization, NeuroImage
- 2009 Conference Chair, IEEE Visweek 2011
- Organizer, Dagstuhl Tensor Seminar



- Reviewing for IEEE Transactions on Visualization and Computer Graphics, IEEE Visualization
- 2008 Papers Co-Chair, International Workshop on Volume Graphics (VG) '08
- Program Committee, IEEE Visualization '08 Conference
- Program Committee, ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games '09 (I3D)
- Program Committee, Non-Photorealistic Animation and Rendering (NPAR) '08
- Program Committee, 2008 International Conference on Image Processing, Computer Vision, and Pattern Recognition
- Program Committee, Computer Graphics and Visualization (CGV) '08
- Program Committee, International Conference on Computer Graphics Theory and Applications (GRAPP) '08
- Program Committee, International Symposium on Visual Computing (ISCV) '08
- NIH study section, July
- Reviewing for ACM SIGGRAPH, IEEE Transactions on Visualization and Computer Graphics, IEEE Visualization
- 2007 Co-Chair, Papers, International Workshop on Volume Graphics (VG) '08
- Sketches and Posters Committee, SIGGRAPH '07
- Organizer, Dagstuhl Tensor Seminar
- Program Committee, International Conference on Computer Graphics Theory and Applications (GRAPP) '07
- Program Committee, Computer Graphics and Visualization (CGV) '07
- Program Committee, Non-Photorealistic Animation and Rendering (NPAR) '07
- Reviewing for ACM SIGGRAPH, IEEE Transactions on Visualization and Computer Graphics, IEEE Transactions on Medical Imaging (TMI), Communications of the ACM, IEEE Visualization, International Workshop on Volume Graphics, International Society for Magnetic Resonance in Medicine Annual Meeting, Elsevier.
- 2006 Associate Editor, IEEE Trans. on Visualization and Computer Graphics (TVCG)
- Best Poster Committee, IEEE Visualization '06 Conference.
- Program Committee, International Conference on Computer Graphics Theory and Applications (GRAPP) '07

Program Committee, International Workshop on Volume Graphics (VG) '07

Paper reviewing for ACM SIGGRAPH (papers and courses), IEEE Transactions on Visualization and Computer Graphics, IEEE Transactions on Medical Imaging (TMI) IEEE Computer Graphics and Applications, IEEE Visualization (regular and applications papers), IEEE Symposium on Visual Analytics Science and Technology, International Workshop on Volume Graphics, International Society for Magnetic Resonance in Medicine Annual Meeting, GRAPP, Elsevier.

2005 Associate Editor, IEEE Trans. on Visualization and Computer Graphics (TVCG)

Program Committee, Symposium on Interactive 3D Graphics and Games (I3D) '06

Program Committee, IEEE Visualization '05

Co-Chair, Posters Committee, IEEE Visualization '05

Best Papers Committee, IEEE Visualization '05

Program Committee, Computer Graphics International (CGI) '05

Program Committee, International Conference on Computer Graphics Theory and Applications (GRAPP) '06

Program Committee, International Workshop on Volume Graphics '06

Session Chair, Visualization '05

Paper reviewing for ACM SIGGRAPH (papers and courses), IEEE Computer Graphics and Applications, IEEE Transactions on Visualization and Computer Graphics, IEEE Visualization (regular and applications papers), ACM I3D, CGI, GRAPP, Elsevier, Dagstuhl.

Grant proposal reviewing for the Dutch National Research Council.

Continued invited contributed to the development of a national research agenda for visualization and analysis tools in the service of homeland security; resulting book, *Illuminating the Path*, became RFP for regional homeland-security research centers.

Continued invited participation in a joint NIH- and NSF-sponsored effort to define and author a research agenda entitled *Visualization Research Challenges*. It encompasses visualization and its applications broadly across many disciplines.

2004 Associate Editor, IEEE Trans. on Visualization and Computer Graphics (TVCG)

Program Committee, Symposium on Interactive 3D Graphics and Games (I3D) '05

Program Committee, Computer Graphics International '05

Program Committee, IEEE Visualization '04

Co-Chair, Posters Committee, IEEE Visualization '04

Associate Chair, Posters Committee, SIGGRAPH '04

Session Chair, Visualization '04

Paper reviewing for ACM SIGGRAPH, IEEE Computer Graphics and Applications, IEEE Transaction on Medical Imaging, IEEE Transactions on Visualization and Computer Graphics. IEEE Visualization (regular and applications papers), ACM I3D, Dagstuhl Perspectives Workshop: Visualization and Image Processing of Tensor Fields

Invited contributor to the development of a national research agenda for visualization and analysis tools in the service of homeland security.

Invited participant in a joint NIH- and NSF-sponsored effort to define a research agenda for visualization in science and medicine.

2003 Associate Editor, IEEE Trans. on Visualization and Computer Graphics (TVCG)

Program Committee, IEEE Visualization '03

Co-Chair, Posters Committee, IEEE Visualization '03

Co-Chair, Posters Committee, SIGGRAPH '04

Paper reviewing for IEEE Computer Graphics and Applications Special Issue on NPR, ACM SIGGRAPH, ASME JCISE, IEEE CG&A,

Proposal reviewer for AAAS

Session Chair, Visualization '03

2002 Paper reviewing for SIGGRAPH '02, Graphics Interface '02, IEEE Visualization '02, IEEE Trans. on Medical Imaging, IEEE Computer Graphics and Applications, and CNS Spectrums

October NIH Human Brain Project special study section (grant review panel)

Session Chair at Visualization '02

May NIH Human Brain Project special study section (grant review panel)

2001 Paper reviewing for SIGGRAPH '01, Visualization '01, ACM Non-Photorealistic Animation and Rendering (NPAR) '02

External NSF grant reviewing.

Session Chair at Visualization '01.

NSF ITR grant review panel and external NSF grant reviewing.

2000 Program Committee, Joint Eurographics-IEEE TCVG Symposium on Visualization (Vis-Sym) '01.

- Paper reviewing for SIGGRAPH '00, Visualization '00, and GI'00.
- 1999 Paper reviewing for SIGGRAPH '99, Visualization '99, and UIST '99.
- Journal paper reviewing for IEEE Trans. on Visualization and Computer Graphics.
- Grant reviewing for the Wellcome Trust and the NIH.
- Chaired breakout meeting on “Software Component Testing and Comparison Specifications” for biological imaging tools. Human Brain Project annual meeting, NIH.
- 1998 Conference paper reviewing for SIGGRAPH '98, Visualization '98, and ACM SIGMOD DiSC.
- Journal paper reviewing for IEEE Trans. on Visualization and Computer Graphics.
- pre-1998 Reviewing for SIGGRAPH Conferences, Visualization Conferences, Volume Visualization Workshops, IEEE Transactions on Visualization and Computer Graphics, IEEE Computer Graphics and Applications, and Computer Aided Geometric Design.

### Teaching and Research Advising

Ph.D. Graduates: Steven Gomez, 2016; Jadrian Miles, 2015; Cagatay Demiralp, 2013; Wenjin Zhou, 2012; Radu Jianu 2012; Daniel Acevedo, 2008; Daniel Keefe, 2007; Liz Marai, 2007; Song Zhang, 2006; Eileen Vote, 2001 (co-advised with Martha Joukowsky)

Ph.D. Candidates: Johannes Novotny, 2014; Hua Guo, 2013; Ryan Cabeen, 2012; Steven Gomez, 2011; Wenjin Zhou, 2008; Jadrian Miles, 2008; Cagatay Demiralp, 2007; Radu Jianu, 2007; Daniel Acevedo, 2002; Daniel Keefe, 2000; Liz Marai, 2000; Song Zhang, 1999.

Postdoc Alumni: Caroline Ziemciewicz, Jian Chen, Cullen Jackson, Eileen Vote

Sc.M. Graduates: Timothy Parsons, 2015; Alicia Boucher, 2013; Trevor O'Brien, 2009; Andy Wald, 2008; Misha Kostandov, 2008; Ryan Boller, 2008; Devon Penney, 2007; Igor Pivkin, 2006; Vadim Slavin, 2005; David Eigen, 2004; Cagatay Demiralp, 2004; Eduardo Hueso, 2004; Jason Sobel, 2003; Andreas Wenger, 2002; Prabhat, 2001

Undergraduate Honors Theses: Stephanie Lee, 2005; Andrew McClain, 2003; Andrew Hull, 2003 (Visual Art); Rachel Weinstein, 2002; Jason Sobel, 2002; Marco da Silva, 2001; Danah Boyd, 2000

2015 [Virtual Reality Design for Science \(CSCI 1370\)](#)

Data Structures and Algorithms, CSCI 0160

Graduate Research Advising: Ryan Cabeen, Connor Gramazio, Eni Halilaj (BME), Steven Gomez, Hua Guo, Jadrian Miles, Johannes Novotny, Timothy Parsons, Wesley Miller, Joshua Tveite

2014 [Interdisciplinary Scientific Visualization \(CSCI 2370\)](#)

Data Structures and Algorithms, CSCI 0160

Graduate Research Advising: Ryan Cabeen, Connor Gramazio, Eni Halilaj (BME), Steven Gomez, Hua Guo, Jadrian Miles, Johannes Novotny, Timothy Parsons, Wesley Miller

2013 [Virtual Reality Design for Science \(CSCI 1370\)](#)

Data Structures and Algorithms, CSCI 0160

Graduate Research Advising: Ryan Cabeen, Connor Gramazio, Eni Halilaj (BME), Steven Gomez, Hua Guo, Jadrian Miles,

Reader: Bireswar Laha (Virginia Tech), Eni Halilaj (BME), Guan Wang (comps prop), Emmanuel Zraggen (comps).

2012 [Interdisciplinary Scientific Visualization \(CSCI 2370\)](#)

Data Structures and Algorithms, CSCI 0160

Postdoctoral Research Advising: Caroline Ziemkiewicz (mentor on successful ACM CI Fellowship), Assawin Gongvatana.

Graduate Research Advising: Alicia Boucher, Ryan Cabeen, Cagatay Demiralp, Connor Gramazio, Eni Halilaj (BME), Steven Gomez, Hua Guo, Radu Jianu, Jadrian Miles, Wenjin Zhou

Undergraduate Research Advising: Nathan Malkin.

Reader: Bireswar Laha (Virginia Tech qual), Adam Darlow (CogLingPsychSci PhD).

2011 Cognition, Human-Computer Interaction, and Visual Analysis, CSCI 2950J

Data Structures and Algorithms, CSCI 0160

Postdoctoral Research Advising: Caroline Ziemkiewicz (mentor on successful ACM CI Fellowship), Assawin Gongvatana (mentor on successful NIH K99)

Graduate Research Advising: Ryan Cabeen, Cagatay Demiralp, Eni Halilaj (BME), Steven Gomez, Hua Guo, Radu Jianu, Jadrian Miles, Wenjin Zhou

Undergraduate Research Advising: Nathan Malkin, who received an Honorable Mention in the Computing Research Association's Outstanding Undergraduate Award competition.

2010 [Interdisciplinary Scientific Visualization \(CSCI 2370\)](#)

Postdoctoral Research Advising: Caroline Ziemkiewicz (mentor on successful ACM CI Fellowship), Assawin Gongvatana (mentor on successful NIH K99)

Graduate Research Advising: Ryan Cabeen, Cagatay Demiralp, Eni Halilaj (BME), Steven Gomez, Radu Jianu, Jadrian Miles, Trevor O'Brien, Wenjin Zhou



Reader: Daniel Pineo (U NH PhD), Adam Darlow (CogLingSci qual), Gideon Goldin (CogLingSci qual), Ofer Pasternak (Tel Aviv U PhD)

Undergraduate Research Advising: Nathan Malkin, David Percy, Tiberiu Florea, Amanda Dowden.

2009 Developed and Taught “Cognition, Human-Computer Interaction, and Visual Analysis”

Postdoctoral Research Advising: Jian Chen, who accepted a tenure-track faculty position at U of S. Miss.

Graduate Research Advising: Cagatay Demiralp, Eni Halilaj, Radu Jianu, Jadrian Miles, Trevor O’Brien, Wenjin Zhou

Reader: Daniel Miranda (Biomedical Engineering quals), Michael Rainbow (Biomedical Engineering quals), Daniel Pinedo (U. NH quals)

Undergraduate Research Advising: Eni Halilaj

2008 [Virtual Reality Design for Science \(CS 137\)](#)

[Software System Design \(CS 190\)](#)

Postdoctoral Research Advising: Jian Chen; Daniel Keefe, who accepted a tenure-track faculty position at U. Minn.

Graduate Research Advising: Ryan Boller, Cagatay Demiralp, Radu Jianu, Jadrian Miles, Trevor O’Brien, Laura Sevilla, Andrew Wald, Wenjin Zhou

Reader: Evan Levanthal (biomedical engineering MD/PhD), Payman Yadollahpour (quals)

Undergraduate Research Advising: David Ginsburg

2007 [Software System Design \(CS 190\)](#)

[Interdisciplinary Scientific Visualization \(CSCI 2370\)](#)

Postdoctoral Research Advising: Jian Chen, Daniel Keefe

Graduate Research Advising: Daniel Acevedo Feliz, Ryan Boller, Cagatay Demiralp, Radu Jianu, Daniel Keefe, Misha Kostandov, Liz Marai, Jadrian Miles, Devon Penney, Andrew Wald, Song Zhang, Wenjin Zhou

2006 [Software System Design \(CS 190\)](#)

[Virtual Reality Design for Science \(CS 137\)](#)

Postdoctoral Research Advising: Jian Chen, David Tate (Psychology)

Graduate Research Advising: Daniel Acevedo Feliz, Ryan Boller, Jon Clayden (visiting PhD student from U. Edinburgh), Cagatay Demiralp, Radu Jianu, Daniel Keefe, Misha Kostandov, Liz Marai, Jadrian Miles, Devon Penney, Igor Pivkin (Appl. Math), Andrew Wald, Song Zhang, Wenjin Zhou

Reader: Aparna Das, Joe Kniss (U. Utah), Sonia Leach, Aggeliki Tsoli

2005 [Software System Design \(CS 190\)](#)

[Interdisciplinary Scientific Visualization \(CS 237\)](#)

Graduate Research Advising: Daniel Acevedo Feliz, Cagatay Demiralp, David Eigen, Radu Jianu, Daniel Keefe, Misha Kostandov, Wenjin Zhou, Dmitri Lemmerman, Liz Marai, Igor Pivkin (Appl. Math), Vadim Slavin, Song Zhang

Undergraduate Research Advising: Stephanie Lee, Misha Zaitzeff

Examiner: Dana Tenneson, Joe Kniss (U. Utah)

Reader: Joe LaViola, Sonia Leach.

2004 [Virtual Reality Design for Science \(CS 137\)](#)

Postdoctoral Research Advising: Cullen Jackson, Eileen Vote

Graduate Research Advising: Daniel Acevedo Feliz, Cagatay Demiralp, David Eigen, Eduardo Hueso, David Karelitz, Daniel Keefe, Dmitri Lemmerman, Liz Marai, Igor Pivkin (Appl. Math), Stephen Seow (Psych.), Vadim Slavin, Song Zhang

Undergraduate Research Advising: Stephanie Lee, Misha Zaitzeff

Examiner: Peter Sibley, Steve Seow (Psych.), Joe Kniss (U. Utah)

Reader: Joe LaViola, Gordon Kindlmann (U. Utah)

2003 [Interdisciplinary Scientific Visualization \(CS 237\)](#)

[Software System Design \(CS 190\)](#)

Postdoctoral Research Advising: Cullen Jackson, Eileen Vote

Graduate Research Advising: Daniel Acevedo Feliz, Cagatay Demiralp, Eduardo Hueso, David Karelitz, Daniel Keefe, Liz Marai, Igor Pivkin (Appl. Math), Stephen Seow (Psych.), Vadim Slavin, Jason Sobel, Song Zhang

Undergraduate Research Advising: Andrew McClain, Misha Zaitzeff

2002 [Interdisciplinary Scientific Visualization \(CS 237\)](#) Newly developed class co-taught with RISD professor Fritz Drury. RISD and Brown students work together to explore design and realization issues for virtual reality scientific visualization applications in Brown's Cave.

Postdoctoral Advising: Cullen Jackson, Eileen Vote

Graduate Advising: Daniel Acevedo Feliz, Kevin Audleman, Cagatay Demiralp, Eduardo Hueso, David Karelitz, Daniel Keefe, Liz Marai, Jason Sobel, Andy Wenger, Song Zhang

Undergraduate Advising: Andrew McClain, Akash Parikh, Phil Stone, Rachel Weinstein

2001 [Software System Design \(CS 190\)](#)

Postdoctoral Advising: Cullen Jackson, Eileen Vote

Graduate Advising: Daniel Acevedo Feliz, Stuart Andrews, Kevin Audleman, Daniel Keefe, Mike Kirby, Liz Marai, Prabhat, Eileen Vote, Andy Wenger, Song Zhang

Undergraduate Advising: Marco da Silva, Scott Davidson, Sarah Papp, Andrew Pienaar, Merrie Ringel, Phil Stone, Rachel Weinstein

Examiner: Gordon Kindlmann (U. Utah)

Reader: R. Michael Kirby, Sc.M.

2000 [Interdisciplinary Scientific Visualization \(CS237\)](#)

[Software System Design \(CS190\)](#)

Graduate Advising: Daniel Acevedo Feliz, Stuart Andrews, Daniel Keefe, Mike Kirby, Joe La Viola, Joe Lee, Liz Marai, Prabhat, Eileen Vote, Song Zhang

Undergraduate Advising: Marco da Silva, Scott Davidson, Samuel Ginsberg, Daniel Morris, Andrew Pienaar, Merrie Ringel, Phil Stone, Benjamin White.

Reader: Lisa Zorn, Sc.B.; Margaret Kosmala, Sc.B.

1999 [Interdisciplinary Scientific Visualization \(CS295-5\)](#). I developed and taught this course for the first time this year. In it, students emulated the process of doing interdisciplinary research by applying for grants, having their proposals evaluated, implementing them, and presenting their work at a mock conference. The groups for each project were required to have participants from multiple disciplines, exposing them to many of the skills required for multi-disciplinary collaborative work. The class also experimented with using a Rhetoric and Writing Fellow to help students with communication skills.

[Software System Design \(CS190\)](#)

Graduate Advising: Daniel Acevedo Feliz, Stuart Andrews, Mike Kirby, Jaehoon Lee, Liz Marai, Paul Reitsma, Song Zhang, Gordon Kindlmann (U. Utah)

Undergraduate Advising: David Akers, Charlie Curry, Cagatay Demiralp, Marco da Silva, Rob Manchester, Toan Pham, Jonathan Reiter.

Reader: Joe LaViola, Sc.M.; Lee Markosian, Ph.D.

1998 [Computer Graphics Seminar \(CS 295-1\)](#) (with Nancy Pollard).

Undergraduate Advising: Danijela Cabrac, Nemanja Petrovic, Jit Kee Chin, Laura Brogach, Kristin Cole, Yury Goldfeld.

1997 Undergraduate Advising: Seth Blumberg, Clifford Elgin, David Devault, Jed Wing.

## University Service

- 2015 Undergraduate Academic Advising
  - BRDD Student Advising
  - Undergraduate CS Concentration Advising
  - Graduate CS Academic Advising
  - Center for Computation and Visualization (CCV) Steering Committee
  - CCV Executive Director Search Committee
  - CS Faculty Search Committee
  - CS Vision Committee
- 2014 Undergraduate Academic Advising
  - BRDD Student Advising
  - Undergraduate CS Concentration Advising
  - Graduate CS Academic Advising
  - Center for Computation and Visualization (CCV) Advisory Committee
  - CCV Executive Director Search Committee
  - CS Executive Committee
- 2013 Undergraduate Academic Advising
  - BRDD Student Advising
  - Undergraduate CS Concentration Advising
  - Graduate CS Academic Advising
  - Center for Computation and Visualization (CCV) Advisory Committee
  - CS Executive Committee
- 2012 Brown RISD Dual Degree (BRDD) Steering Committee
  - Undergraduate Academic Advising
  - BRDD Student Advising
  - Undergraduate CS Concentration Advising
  - Graduate CS Academic Advising

Magnetic Resonance Facility (MRF) Executive Cmomitee

MRF Science Advisory Board

Center for Computation and Visualization (CCV) Advisory Committee

Faculty Mentoring

CS Executive Committee

CS Search Committee

2011 Brown RISD Dual Degree (BRDD) Steering Committee

Freshmen and Sophomore Advising

BRDD Student Advising

Undergraduate and Graduate CS Academic Advising

Magnetic Resonance Facility (MRF) Executive Cmomitee

MRF Science Advisory Board

Center for Computation and Visualization (CCV) Advisory Committee

Faculty Mentoring: Savvas Koushiappas (Physics), Benjamin Raphael, Erik Sudderth

CS Executive Committee

Chair, CS Computing Vision Committee

2010 Brown RISD Dual Degree (BRDD) Steering Committee

Freshmen and Sophomore Advising

BRDD Student Advising

Undergraduate and Graduate CS Academic Advising

Magnetic Resonance Facility (MRF) Executive Cmomitee

MRF Science Advisory Board

Center for Computation and Visualization (CCV) Advisory Committee

Faculty Mentoring: Savvas Koushiappas (Physics), Benjamin Raphael

CCV Executive Director Search Interviewing

Chair, CS Computing Vision Committee

CS Examinations Committee



Hosted seminar/colloquium speakers: Miriah Meyer, Won-Ki Jeong, Ofer Pasternak

2009 Brown RISD Dual Degree (BRDD) Steering Committee

Freshmen and Sophomore Advising

BRDD Student Advising

Center for Computation and Visualization (CCV) Advisory Committee

Magnetic Resonance Facility (MRF) Executive Cmomitee

MRF Science Advisory Board

2008 Chair (Winter), CS Faculty Search Committee

Member (Fall), CS Faculty Search Committee

CS Computing/Facilities Committee

Brown RISD Dual Degree (BRDD) Steering Committee

Freshmen and Sophomore Advising

BRDD Student Advising

Center for Computation and Visualization (CCV) Advisory Committee

Magnetic Resonance Facility (MRF) Executive Committee

MRF Science Advisory Board

BSP search committee (MR Physicist)

2007 Chair, CS Faculty Search Committee

Chair, CS Computing/Facilities Committee

Freshmen and Sophomore Advising

Center for Computation and Visualization (CCV) Advisory Committee

Magnetic Resonance Facility (MRF) Executive Committee

MRF Science Advisory Board

BSP search committee

Hosted seminar/colloquium speakers: Gordon Kindlmann, Van Wedeen

2006 University Resources Committee (URC)

Search Committee for university Chief Information Officer and Vice President of CIS

Chair, CS Computing/Facilities Committee

Managed Compilation of All Departmental Research Results for NRC Review

Search Committee for CS Department Manager

Search Committee for CS Faculty

CS ad hoc Brochure Visual-Design Committee

Freshmen Advising

Center for Computation and Visualization (CCV) Advisory Committee

Magnetic Resonance Facility (MRF) Executive Committee

MRF Science Advisory Board

Brain Science Program (BSP) Executive Committee

Wriston Fellowship Selection Committee

Writing Fellows Advisory Board

Hosted seminar/colloquium speakers: David C. Banks, TJ Janken-Kelly, Robert S. Laramée, Frederic Leymarie, Andy Lomas.

2005 University Resources Committee (URC)

Magnetic Resonance Facility (MRF) Executive Committee

MRF Science Advisory Board

Center for Computation and Visualization (CCV) Advisory Committee

CCV Director Search Committee

Brain Science Program (BSP) Executive Committee

Committee for Inter-Institutional Cooperation (CIC) (Brown/RISD)

Wriston Fellowship Selection Committee

Chair, CS Computing/Facilities Committee

CS ad hoc web upgrade committee

Hosted seminar/colloquium speakers: Donald House, Arie Kaufmann, Gideon May, Dmitri Metaxis, Colin Ware

Moderated Royce Fellows' Seminar

2004 University Resources Committee (URC)

Magnetic Resonance Facility (MRF) Executive Committee

MRF Search Committee

Center for Computation and Visualization (CCV) Advisory Committee

Committee for Inter-Institutional Cooperation (CIC) (Brown/RISD)

Medical School Applicant Interviewing

CS Curriculum Committee

CS Facilities Committee

CS ad hoc administrative staff search committee

Hosted seminar/colloquium speakers: Derek Jones, John Allman, Hanspeter Pfister, Kelly Gaither, Tom Raidler, and Robert Moorhead

2003 Magnetic Resonance Facility (MRF) Executive Committee

MRF Search Committee

Brown/RISD ad hoc committee on collaboration and newly created standing Committee for Inter-Institutional Cooperation (CIC)

Ad hoc Computational Initiative Committee

CS Graduate Admissions Committee

CS ad hoc Teaching Load Committee

Hosted seminar/colloquium speakers: Iain Woodhouse, Dean Turner, Felice Frankel, Beth Meyerand, Xianfeng Gu, Robert Moorhead, Daniel Weiskopf, Philip Fu, Robert Haimes, Raghu Machiraju, Colin Ware

2002 Magnetic Resonance Facility Executive Committee

Brown/RISD committee on collaboration

CS Graduate Admissions Committee

Hosted seminar/colloquium speakers: Tarn Tanner, Greg Little

2001 CS Graduate Admissions Committee

Magnetic Resonance Facility Executive Committee

Brain Science Program Web Site Committee

Brain Science Program Graduate Advisory and Admissions Committee

Brain Science Program Brochure Committee

Hosted seminar/colloquium speaker: davidkremers (Caltech)

Undergraduate and graduate academic advising

2000 Chaired CS Graduate Recruiting Committee

CS Graduate Admissions Committee

Magnetic Resonance Facility Executive Committee

Brain Science Program Web Site Committee

Brain Science Program Graduate Advisory and Admissions Committee

Brain Science Program Brochure Committee

Hosted seminar/colloquium speakers: Peter Basser (NIH), Chris Johnson (U. Utah), Maurizio Forte (Florence).

Committee to develop speaker series on “What Physics can Measure: What Biologists Want to Measure”

Committee to develop speaker series on Simulation and Visualization.

Undergraduate and graduate academic advising

1999 Chaired CS Graduate Recruiting Committee

CS Graduate Admissions Committee

Brain Science Program Web Site Committee

Brain Science Program Graduate Advisory Committee

Hosted seminar/colloquium speakers: Felice Frankel (MIT and Victoria Interrante (U. Minn.)

Hosted a department Town Meeting

1998 CS Graduate Recruiting Committee

Undergraduate and graduate academic advising

Helped make available color printing and slide-making to the department.

**Memberships** IEEE Fellow, ACM.

Prepared August 4, 2016