

# CURRICULUM VITAE

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**JERRY L. PRINCE, Ph.D.**

## ADDRESS

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## CURRENT POSITIONS

William B. Kouwenhoven Professor  
Department of Electrical and Computer Engineering  
The Johns Hopkins University

Secondary Appointment in Applied Mathematics and Statistics  
Secondary Appointment in Computer Science  
The Johns Hopkins University

Joint Appointment in the Department of Radiology and Radiological Science  
Joint Appointment in the Department of Biomedical Engineering  
The Johns Hopkins University School of Medicine

## RESEARCH INTERESTS

Image processing and computer vision with application to medical imaging; particularly, 1) tissue motion estimation using tagged magnetic resonance imaging, 2) locating, representing, and measuring properties of the human brain cortex from magnetic resonance images, and 3) computed tomography methods for cone beam geometries and vector fields.

## EDUCATION

Ph.D.	1988	Electrical Engineering	Massachusetts Institute of Technology Thesis title: "Geometric Model-Based Estimation From Projections." Thesis advisor: Alan S. Willsky
E.E.	1986	Electrical Engineering	Massachusetts Institute of Technology
S.M.	1982	Electrical Engineering	Massachusetts Institute of Technology Thesis title: "A method for the reduction of blurring due to registration error in compound ultrasound images." Thesis advisors: F. E. Barber and W. M. Siebert.

B.S.	1979	Electrical Engineering and Computer Science	University of Connecticut EE & CS (dual); Summa Cum Laude with Honors
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## PROFESSIONAL EXPERIENCE

July 2001 – Present	William B. Kouwenhoven Professor Johns Hopkins University, Department of Electrical and Computer Engineering
Mar 2001 – Oct 2004	Associate Director for Research Johns Hopkins University, Center for Computer Integrated Surgical Systems and Technology
July 1998 – Present	Professor Johns Hopkins University, Department of Electrical and Computer Engineering
July 1994 - June 1998	Associate Professor The Johns Hopkins University, Department of Electrical and Computer Engineering
Jan. 1989 - June 1994	Assistant Professor The Johns Hopkins University, Department of Electrical and Computer Engineering
Jan. 1988 - Dec 1988	Member of Technical Staff The Analytic Sciences Corporation (TASC), Reading MA
Sep. 1985 - Dec 1988	Research Assistant Massachusetts Institute of Technology
Summer 1984	Member of Summer Staff M.I.T. Lincoln Laboratory, Lexington MA
Sep. 1983 - May 1985	Teaching Assistant Massachusetts Institute of Technology
June 1982 - Aug 1983	Electrical Engineer Brigham and Women's Hospital, Boston MA
Sep. 1979 - May 1982	Research Assistant Massachusetts Institute of Technology

## HONORS AND AWARDS

1977	Tau Beta Pi Honor Society
1977	Eta Kappa Nu Honor Society
1978	Phi Kappa Phi Honor Society
1982	Member, Sigma Xi Scientific Research Society
1993-1998	Presidential Faculty Fellow Award, National Science Foundation
1996	IEEE Signal Processing Society 1996 Young Author Best Paper Award in the Image and Multidimensional Signal Processing Area (with Thomas S. Denney Jr.)
1997	Maryland's Outstanding Young Engineer Engineer (\$2,500 cash award and the Allan C. Davis Medal)
2004	Fellow of the IEEE
2010	Outstanding Reviewer Award, CVPR
2011	Fellow of the MICCAI Society
2012	Enduring Impact Award, MICCAI Society
2015	Elected into the University of Connecticut Academy of Distinguished Engineers

- 2015 Recipient of the Alavi-Mandell Award for “PET Attenuation Correction Using Synthetic CT from Ultrashort Echo-Time MR Imaging”, Society of Nuclear Medicine and Molecular Imaging. 14 April 2015.
- 2016 SPIE Medical Imaging Young Scientist Award (2016): for S. Reaungamornrat, T. De Silva, A. Uneri, J.-P. Wolinsky, A. J. Khanna, G. Kleinszig, S. Vogt, J. L. Prince, and J. H. Siewerdsen, “MIND demons for MR-to-CT deformable image registration in image-guided spine surgery, In Proceedings of the SPIE Medical Imaging Conference. San Diego, California, Paper 9786-16, 28 February 2016, Oral Presentation. Winner of the SPIE Medical Imaging Conference Young Scientist Award.

### CITATION STATISTICS (September 2016):

Google Scholar	<a href="https://scholar.google.com/citations?user=BQcJMmcAAAAJ&amp;hl=en&amp;oi=ao">https://scholar.google.com/citations?user=BQcJMmcAAAAJ&amp;hl=en&amp;oi=ao</a> Citations = 22192 h-index = 56 i10-index: 205
Scopus	Author ID = 56600943200 Documents = 425 Total Citations = 9336 h-index = 42
ResearcherID	<a href="http://www.researcherid.com/rid/A-3281-2010">http://www.researcherid.com/rid/A-3281-2010</a> Total articles = 573 Times cited = 9662 Average citations per article = 35.79 h-index = 39

### PROFESSIONAL ACTIVITIES

#### **Professional Memberships**

- Fellow of the International Electrical and Electronics Engineers (IEEE)
- Member of Sigma Xi, The Scientific Research Society
- Fellow of the Medical Image Computing and Computer Assisted Interventions Society (MICCAI)
- Member of the International Society of Magnetic Resonance in Medicine (ISMRM)
- Member of the International Society for Optics and Photonics (SPIE)

#### **Editorships**

- Associate Editor for IEEE Transactions on Image Processing, August 1992 – September 1995
- Associate Editor for IEEE Transactions on Medical Imaging, June 2000 – August 2004
- Editor of Special Issue: Medical Image Analysis, August 2011. Editorial Remarks, Vol.15, No.4, pp.601-602, August 2011.
- Editorial Board Member of Medical Image Analysis Journal, March 2003 – Present

#### **Advisory Board Memberships**

- Center for Computational Biology, UCLA, 2005 – 2011

- Department of Biomedical Engineering, Carnegie Mellon University, 2006
- Department of Biomedical Engineering, Carnegie Mellon University, 2011

### IEEE Signal Processing Society Activities

- Member of the IEEE Signal Processing Society Image and Multidimensional Signal Processing (IMDSP) Technical Committee, May 1994 - April 2000

### Conference Activities

- 1989 Technical Session Chairman for the Johns Hopkins Conference on Information Sciences and Systems
- 1991 Technical Session Chairman for the Johns Hopkins Conference on Information Sciences and Systems, Workshop on Multidimensional Signal Processing
- 1992 Reviewer for International Conference on Acoustics, Speech, and Signal Processing,
- 1993 Reviewer for International Conference on Acoustics, Speech, and Signal Processing, Co-Chairman of the 1993 Hopkins Conference on Information Sciences and Systems, March 24–26.
- 1994 Member of Program Committee and Session Chair, IEEE Computer Society Workshop on Non-rigid and Articulate Motion, Austin, Texas,
- 1995 Publications Chair, 1995 IEEE Signal Processing Society International Conference on Image Processing, Washington D. C., October
- 1996 Workshop on Multidimensional Signal Processing, Reviewer for International Conference on Image Processing, Member of Program Committee, 1996 Image and Multidimensional Signal Processing Workshop, Belize, March, Member of Technical Program, 1996 IEEE Workshop on Mathematical Methods in Biomedical Image Analysis, San Francisco, June
- 1997 Technical Session Chairman for the Johns Hopkins Conference on Information Sciences and Systems, Reviewer for International Conference on Image Processing, Member of Program Committee, XVth Conference on Information Processing in Medical Imaging, June 9–13, Member of Program Committee, IEEE Nonrigid and Articulated Motion Workshop, Puerto Rico, June 15–16,
- 1998 Workshop on Multidimensional Signal Processing, Reviewer for International Conference on Image Processing, Member of Program Committee, 1998 Image and Multidimensional Signal Processing Workshop, Belize, March; Member of Program Committee, 3rd IEEE Workshop on Biomedical Image Analysis (WBIA), University of California, Santa Barbara June 26–27,
- 1999 Member of Program Committee, 16th Conference on Information Processing in Medical Imaging, June 9–13; Co-Chairman of the 1999 Hopkins Conference on Information Sciences and Systems, March 17–19; Member of Program Committee, Erlangen Workshop '99: Vision, Modeling, and Visualization, Erlangen, Germany, November 17–19;
- 2000 Member of Program Committee, IEEE Workshop on Mathematical Methods in Biomedical Image Analysis Hilton Head Island, South Carolina , June 11–12;
- 2001 Member of Program Committee, IEEE Workshop on Mathematical Methods in Biomedical Image Analysis Kauai, Hawaii, December 8–9; Member of Scientific Review Committee, MICCAI'2001, Utrecht, The Netherlands, 14–17 October; Member of Program Committee, CVPR 2001, Hawaii 11–13 December;
- 2002 Organizer of Invited Minisymposium, The Shape of Medical Imaging, SIAM Life Science Conference, Boston, 6–8 March; Member of Program Committee, First IEEE International Symposium on Biomedical Imaging (ISBI) 2002, Washington DC, 7–10 July;
- 2003 Member of Program Committee, Int'l Conf on Comp Vis and Patt Recog (CVPR) 2003, Madison, Wisconsin, 16–22 June; Member of Scientific Review Committee and Session

- Chair, Information Processing in Medical Imaging (IPMI) 2003, Ambleside, UK; Member of Technical Program Committee, Int'l Conf on Image Proc (ICIP) 2003, Barcelona, 14–17 September; Member of Scientific Board, International Symposium on Surgery Simulation and Soft-Tissue Modeling (IS4TM) 2003, Juan-Les-Pins, France, June 12–13;
- 2004 Member of Program Committee, 2004 IEEE International Symposium on Biomedical Imaging: From Nano to Macro, 15–18 April; Member of Scientific Review Panel, 7<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI), 26 – 30 September;
- 2005 Member of Scientific Review Panel, Information Processing in Medical Imaging, Glenwood Springs, CO, July 11–15; Member of Review Committee, 8<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI), October 26–29;
- 2006 Co-Organizer (with J.S. Duncan, D. Metaxas, and L. Axel), Heart Modeling: Image Acquisition, Segmentation, Modeling and Analysis, IPAM UCLA, February 6–10; Member of Program Committee: Mathematical Methods in Computational Anatomy, Copenhagen, Oct 1; Member of Program Committee, 2006 IEEE International Symposium on Biomedical Imaging (ISBI): From Nano to Macro, April 6–9; Member of Program Committee, Medical Imaging and Augmented Reality (MIAR), Shanghai, August 24–25; Member of Program Committee, IEEE Conf. Comp. Vis. and Patt. Recog. (CVPR), June 17–22; Member of Program Committee, IEEE International Conference in Image Processing (ICIP), Atlanta, USA, October; Member of Program Committee, MMBIA 2006: IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis, June 17–18; Member of Program Committee, Workshop on Mathematical Foundation of Computational Anatomy, Copenhagen, October 1; Member of Program Committee, Medical Image Computing and Computer Assisted Interventions (MICCAI), Copenhagen, October 2–6;
- 2007 Member of Program Committee, IEEE Conf Comp Vis Patt Recog (CVPR), Jun 19–21; Member of Program Committee, IEEE Int'l Conf Comp Vis (ICCV), 14–21 October; Reviewer for IEEE International Symposium on Biomedical Imaging; Reviewer for IEEE International Conference on Image Processing; Reviewer for Workshop on Information Processing in Medical Imaging, Reviewer for IEEE Mathematical Methods in Biomedical Image Analysis; Member of Program Committee, 2007 Medical Image Computing and Computer Assisted Interventions (MICCAI);
- 2008 Reviewer for IEEE International Symposium on Biomedical Imaging; Reviewer for Medical Image Computing and Computer Assisted Interventions (MICCAI); Member of Program Committee: 2008 IEEE Conference on Computer Vision and Pattern Recognition; Member of Program Committee: 2008 IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA); Member of Program Committee: 2nd MICCAI Workshop on Mathematical Foundations of Computational Anatomy (MFCA-2008);
- 2009 General Chair, Information Processing in Medical Imaging (IPMI 2009), Williamsburg, VA, July 5–10;
- 2010 Member of Program Committee: International Symposium on Biomedical Imaging (ISBI); Member of Program Committee: Mathematical Methods in Biomedical Image Analysis (MMBIA); Member of Review Committee: IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), 2010. (Won Outstanding Reviewer Award);
- 2011 Member of Program Committee: SPIE Conference on Medical Imaging, 2011; Reviewer for IEEE Conference on Computer Vision and Pattern Recognition, Reviewer for IEEE International Conference on Computer Vision; Member of Program Committee of Workshop on Information Processing in Medical Imaging; Member of Review Committee: Medical Image Computing and Computer Assisted Interventions; Member of Review Committee IEEE Mathematical Methods in Biomedical Image Analysis;

- 2012 Member of Review Committee IEEE Mathematical Methods in Biomedical Image Analysis; Member of Program Committee: SPIE Conference on Medical Imaging, 2011; Reviewer for IEEE Conference on Computer Vision and Pattern Recognition, Reviewer for IEEE International Conference on Computer Vision; Member of Program Committee of Workshop on Information Processing in Medical Imaging; Member of Review Committee: Medical Image Computing and Computer Assisted Interventions; Member of Review Committee IEEE Mathematical Methods in Biomedical Image Analysis; Reviewer for European Conference on Computer Vision; Reviewer for International Symposium on Biomedical Imaging; Reviewer for Multimodal Brain Image Analysis (MBIA);
- 2013 Technical Session Chairman for the Johns Hopkins Conference on Information Sciences and Systems; Member of Program Committee, Workshop on Information Processing in Medical Imaging; Reviewer for IEEE International Symposium on Biomedical Imaging; Member of Review Committee: Medical Image Computing and Computer Assisted Interventions; Reviewer for IEEE Conference on Computer Vision and Pattern Recognition; Reviewer for MICCAI Workshop on Mathematical Foundations of Computational Anatomy
- 2014 Member of Program Committee, SPIE Medical Imaging; Reviewer for IEEE Conference on Computer Vision and Pattern Recognition; Reviewer for IEEE International Conference on Image Processing; Member of Review Committee: Medical Image Computing and Computer Assisted Interventions
- 2015 Member of Program Committee, SPIE Medical Imaging, Reviewer for IEEE Conference on Computer Vision and Pattern Recognition; Reviewer for IEEE International Conference on Image Processing; Member of Review Committee: Medical Image Computing and Computer Assisted Interventions (MICCAI), Member of Program Committee, International Workshop on Information Processing in Medical Imaging (IPMI), Reviewer for the Hopkins-Princeton Conference on Information Sciences and Systems (CISS), Reviewer for International Conference on Computer Vision (ICCV), Reviewer for IEEE International Symposium on Biomedical Imaging (ISBI),

### **Grant and Journal Paper Reviewing**

- 1989 Reviewer for journal papers submitted to Optical Engineering, IEEE Transactions on Medical Imaging, and IEEE Transactions on Acoustics, Speech, and Signal Processing.
- 1990 Reviewer for journal papers submitted to IEEE Transactions on Acoustics, Speech, and Signal Processing, IEEE Transactions on Medical Imaging, Multidimensional Systems and Signal Processing.  
Grant reviewer for the National Science Foundation.
- 1991 Reviewer for journal papers submitted to IEE Proceedings—F, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Acoustics, Speech, and Signal Processing, Signal Processing (journal).  
Grant reviewer for NIH XB-F Study Section.
- 1992 Reviewer for journal papers submitted to Magnetic Resonance in Medicine, Signal Processing (journal), CRC Press (book proposal review), Signal Processing (journal).  
Grant reviewer for NIH SSS-X-B4 Study Section.
- 1993 Grant reviewer for the National Science Foundation.
- 1994 Reviewer for journal papers submitted to Signal Processing (journal), IEEE Transactions on Medical Imaging, IEEE Transaction on Image Processing, Signal Processing Letters, Medical Physics.  
Grant reviewer for the National Science Foundation.
- 1995 Reviewer for journal papers submitted to IEEE Transactions on Medical Imaging, IEEE Transactions on Image Processing.

- Grant reviewer for NIH DMG Study Section.
- 1996 Reviewer for journal papers submitted to Medical Imaging Analysis (journal), IEEE Transactions on Image Processing, IEEE Transactions on Medical Imaging.  
Grant reviewer for the National Science Foundation, NSERC (Natural Sciences and Engineering Research Council of Canada), the Whitaker Foundation, NIH DMG-1 Study Section.
- 1997 Reviewer for journal papers submitted to IEEE Transactions on Medical Imaging, IEEE Transactions on Image Processing.  
Grant reviewer for the National Science Foundation, the Whitaker Foundation, the NIH DMG Study Section.
- 1998 Reviewer for journal papers submitted to IEEE Transactions on Image Processing, Medical Image Analysis (journal).  
Grant reviewer for NIH DMG-1 Study Section, the National Science Foundation. Member of NSF FY98 CAREER Review Panel of the Microelectronic Information Processing Systems Division. Invited member of Data Management and Visualization Workshop, Department of Energy, Jan 28-29, 1998.
- 1999 Reviewer for journal papers submitted to Medical Image Analysis (journal), IEEE Transactions on Medical Imaging.  
Grant reviewer for NIH DMG Study Section.
- 2000 Reviewer for journal papers submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Medical Imaging, Magnetic Resonance Imaging (journal),  
Grant reviewer for NIH DMG Study Section, the National Science Foundation. Reviewer for a Pearson Prentice Hall textbook.
- 2001 Reviewer for journal papers submitted to IEEE Transactions on Medical Imaging, IEEE Transactions on Pattern Analysis and Machine Intelligence.  
Grant reviewer for NIH SSSX-46 Study Section.
- 2002 Reviewer for journal papers submitted to International Journal of Imaging and Graphics, IEEE Transactions on Pattern Analysis and Machine Intelligence, Signal Processing Letters, IEEE Transactions on Medical Imaging.
- 2003 Reviewer for journal papers submitted to IEEE Transactions on Medical Imaging.  
Standing member of NIH BMIT Study Section. Grant reviewer for NIH ZRG1 Special Study Section. Reviewed a book proposal for Wiley.
- 2004 Reviewer for journal papers submitted to Medical Image Analysis (journal), Journal of Biomechanics. Reviewed an internal grant proposal for a top US University.  
Standing member of NIH BMIT Study Section.
- 2005 Reviewer for journal papers submitted to Journal of Computational Physics, Medical Image Analysis (journal), Magnetic Resonance in Medicine, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Medical Imaging, Image and Vision Computing, Applied Numerical Mathematics, Medical Physics.  
Reviewed a PhD thesis for a top university in Asia.  
Standing member of NIH BMIT Study Section. Grant reviewer NIH ZRG1 Special Study Section.
- 2006 Reviewer for journal papers submitted to Applied Numerical Mathematics, Medical Image Analysis (journal), Magnetic Resonance in Medicine, IEEE Transactions on Medical Imaging, IEEE Transaction on Pattern Analysis and Machine Intelligence.  
Standing member of NIH BMIT Study Section. Grant reviewer for Johns Hopkins University internal grants, NIH ZRG1 Special Study Section, NIH SBIB Study Section.
- 2007 Reviewer for journal papers submitted to Medical Image Analysis (journal).

- Standing member of NIH BMIT Study Section
- 2008 Reviewer for journal papers submitted to Medical Image Analysis (journal), NeuroImage, IEEE Transactions on Image Processing, Magnetic Resonance in Medicine
- 2009 Reviewer for journal papers submitted to Medical Image Analysis (journal), Magnetic Resonance Imaging, NeuroImage,  
Grant reviewer for NIH ZRG1 Special Study Section
- 2010 Reviewer for journal papers submitted to Medical Image Analysis (journal), Magnetic Resonance in Medicine, International Journal of Biomedical Imaging, NeuroImage.  
Grant reviewer for Johns Hopkins internal grants. Served on the NIH Special Study Section for the NIMH Human Connectome Project (HCP), 2010. Grant reviewer for the Raine Medical Research Foundation, University of Western Australia, 2010.
- 2011 Reviewer for journal papers submitted to Medical Image Analysis (journal), Physics in Medicine and Biology,  
Member of NIH Study section on Eureka Grants; Member of NIH Study Section NIDCD, Translational Grants;
- 2012 Reviewer for journal papers submitted to Medical Image Analysis (journal), Journal of Medical and Biological Engineering,  
Grant reviewer for NIH PREDICT grants, NIH ZNS1 SRB-G Study Section (NINDS Special Emphasis panel), Science Foundation of Ireland SESAME grants. Reviewed internal grants for a top US research university.
- 2013 Reviewer of journal papers submitted to Medical Image Analysis (journal), Human Brain Mapping, Journal of the Optical Society of America A, Medical Imaging Analysis (journal)  
Grant reviewer for NIH BMIT Study Section Special Panel on Pediatric Neuroscience.  
Panelist for selection of the MICCAI Society Annual Career Awards
- 2014 Reviewer of journal papers submitted to SPIE Journal of Medical Imaging, Psychiatry Research: Neuroimaging, Medical Image Analysis,  
Member of NIH Special Emphasis Panel ZDC1 SRB-K(15).
- 2015 Reviewer of journal papers submitted to Medical Image Analysis (journal).  
Reviewer for NIH Biomedical Imaging Technologies study section (BMIT), Grant reviewer for Reviewer for NIH CDRC Special Study section, Reviewer for JHU Discovery grants,

## Consulting

- The Analytic Sciences Corporation (TASC), Reading MA (1989-1990)
- Integrated Surgical Systems (ISS), Sacramento CA (1997)
- Diagnosoft, Incorporated, Palo Alto CA (2002-2011)
- Sonavex, Incorporated, Baltimore, MD (2015-present)

## JOURNAL PUBLICATIONS

1. J. L. Prince and A. S. Willsky, "A Geometric Projection-Space Reconstruction Algorithm", Linear Algebra and Its Applications special issue on Linear Algebra in Computed Tomography, ed. Gabor Herman, vol. 130, pp. 151–191, March 1990.
2. J. L. Prince and A. S. Willsky, "Reconstructing Convex Sets From Support Line Measurements", IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 12, no. 4, pp. 377–389, April 1990.
3. J. L. Prince and A. S. Willsky, "Constrained Sinogram Restoration for Limited-Angle Tomography", Optical Engineering, vol. 29, pp. 535–544, May 1990.



4. J. L. Prince and A. S. Willsky, "Convex Set Reconstruction Using Prior Shape Information", CVGIP: Graphical Models and Image Processing, vol. 53, no. 5, pp. 413–427, September 1991.
5. J. L. Prince and E. R. McVeigh, "Motion Estimation From Tagged MR Image Sequences" IEEE Trans. on Medical Imaging, vol. 11, no. 2, pp. 238–249, June 1992.
6. H. W. Müller-Gärtner, J. M. Links, J. L. Prince, R. N. Bryan, E. R. McVeigh, J. P. Leal, C. Davatzikos, J. J. Frost, "Measurement of Radiotracer Concentration in Brain Gray Matter Using Positron Emission Tomography: MRI-Based Correction for Partial Volume Effects", J. Cerebral Blood Flow and Metabolism, vol. 12, no. 4, pp. 571–583, 1992.
7. J. L. Prince and A. S. Willsky, "Hierarchical Reconstruction Using Geometry and Sinogram Restoration", IEEE Transactions on Image Processing, vol. 2, no. 3, pp. 401–416, July 1993.
8. M. A. Guttman, J. L. Prince, and E. R. McVeigh, "Tag and Contour Detection in Tagged MR Images of the Left Ventricle", IEEE Transactions on Medical Imaging, vol. 13, no. 1, pp. 74–88, March 1994.
9. \*T. S. Denney, Jr. and J. L. Prince, "Optimal Brightness Functions for Optical Flow Estimation of Deformable Motion", IEEE Transactions on Image Processing, vol. 3, no. 2, pp. 178–191, March 1994.  
 \*This paper won the IEEE Signal Processing Society 1996 Young Author Best Paper Award in the Image and Multidimensional Signal Processing Area.
10. J. L. Prince, "Tomographic Reconstruction of 3-D Vector Fields Using Inner Product Probes", IEEE Transactions on Image Processing, vol. 3, no. 2, pp. 216–219, March 1994.
11. C. A. Davatzikos and J. L. Prince, "An Active Contour Model for Mapping the Cortex", IEEE Transactions on Medical Imaging, vol. 14, no. 1, pp. 65–80, March 1995.
12. T. S. Denney, Jr., and J. L. Prince, "A Frequency-Domain Performance Analysis of Horn and Schunck's Optical Flow Algorithm for Deformable Motion," IEEE Transactions on Image Processing, vol. 4, no. 9, pp. 1324–1328, September 1995.
13. J. L. Prince, Q. Tan, and D. Pham, "Optimization of MR Pulse Sequences for Bayesian Image Segmentation," Medical Physics, vol. 22, no. 10, pp. 1651–1656, October 1995.
14. T. S. Denney Jr. and J. L. Prince, "Reconstruction of 3-D Left Ventricular Motion From Planar Tagged Cardiac MR Images: An Estimation Theoretic Approach," IEEE Transactions on Medical Imaging, vol. 14, no. 4, pp. 625–635, December 1995.
15. C. A. Davatzikos, M. Vaillant, S. Resnick, J. L. Prince, S. Letovsky, and R. N. Bryan, "A Computerized Approach for Morphological Analysis of the Corpus Callosum," Journal of Computer Assisted Tomography, vol. 20, no. 1, pp. 88–97, January 1996.
16. S. N. Gupta, and J. L. Prince, "Stochastic Models for DIV-CURL Optical Flow Methods," IEEE Signal Processing Letters, vol. 3, no. 2, pp. 32–34, February 1996.
17. C. A. Davatzikos, J. L. Prince, and R. Nick Bryan, "Image Registration Based on Boundary Mapping", IEEE Transactions on Medical Imaging, vol. 15, no. 1, pp. 112–115, February 1996.
18. J. L. Prince, "Convolution Backprojection Formulas for 3-D Vector Tomography with Application to MRI," IEEE Transactions on Image Processing, vol. 5, no. 10, pp. 1462–1472, October 1996.
19. J. M. Links, J. L. Prince, and S. N. Gupta, "A Vector Wiener Filter for Dual-Radionuclide Imaging," IEEE Transactions on Medical Imaging, vol. 15, no. 5, pp. 700–709, October 1996.
20. D. L. Pham, A. P. Dagher, J. L. Prince, and C. Xu, "An Automated Technique for Statistical Characterization of Brain Tissues in Magnetic Resonance Imaging," International Journal of Pattern Recognition and Artificial Intelligence, vol. 11, no. 8, pp. 1189–1211, December 1997.

21. N. Osman and J. L. Prince, "3-D Vector Tomography on Bounded Domains," *Inverse Problems*, vol. 14, pp. 185–196, 1998.
22. C. Xu and J. L. Prince, "Snakes, Shapes, and Gradient Vector Flow," *IEEE Transactions on Image Processing*, vol. 7, no. 3, pp. 359–369, March 1998.
23. C. Xu and J. L. Prince, "Generalized Gradient Vector Flow External Forces for Active Contours", *Signal Processing*, vol. 71, no. 2, pp. 131–139, December 1998.
24. W. S. Kerwin and J. L. Prince, "Cardiac Material Markers from Tagged MR Images," *Medical Image Analysis*, vol. 2, issue 4, pp. 339–353, 1998.
25. C. A. Davatzikos and J. L. Prince, "Convexity Analysis of Active Contour Algorithms," *Image and Vision Computing*, vol. 17, no. 1, pp. 27–36, January 1999.
26. D. L. Pham and J. L. Prince, "An Adaptive Fuzzy C-Means Algorithm for Image Segmentation in the Presence of Intensity Inhomogeneities" *Pattern Recognition Letters*, vol. 20, no. 1, pp. 57–68, 15-January, 1999.
27. W. S. Kerwin and J. L. Prince, "Tracking MR tag surfaces using a spatio-temporal filter and interpolator," *Int'l Journal of Imaging Systems and Technology*, vol. 10, pp. 128–142, 1999.
28. C. Xu, D. L. Pham, M. E. Rettmann, D. N. Yu, and J. L. Prince, "Reconstruction of the human cerebral cortex from magnetic resonance images", *IEEE Trans. Medical Imaging*, vol. 18, no. 6, pp. 467–480, June 1999.
29. W. S. Kerwin and J. L. Prince, "The Kriging Update Model and Recursive Space-Time Function Estimation," *IEEE Trans. on Signal Processing*, vol. 47, no. 11, pp. 2942–2952, November 1999.
30. D. L. Pham and J. L. Prince, "Adaptive Fuzzy Segmentation of Magnetic Resonance Images," *IEEE Trans. on Medical Imaging*, vol. 18, no. 9, pp. 737–752, September 1999.
31. N. F. Osman, W. S. Kerwin, E. R. McVeigh, and J. L. Prince, "Cardiac Motion Tracking Using CINE Harmonic Phase (HARP) Magnetic Resonance Imaging", *Magnetic Resonance in Medicine*, vol. 42, no. 6, pp. 1048–1060, December 1999.
32. J. L. Prince, S. N. Gupta, and N. F. Osman, "Bandpass Optical Flow for Tagged MRI", *Medical Physics*, vol. 27, no. 1, pp. 108–118, January 2000.
33. W. S. Kerwin and J. L. Prince, "A k-space Analysis of MR Tagging", *Journal of Magnetic Resonance*, vol. 142, pp. 313–322, 2000.
34. D. L. Pham, C. Xu, and J. L. Prince, "Current Methods in Medical Image Segmentation", *Annual Review of Biomedical Engineering*, vol. 2, no. 1, pp.315–337, 2000.
35. J. Garot, D. A. Bluemke, N. F. Osman, C. E. Rochitte, E. R. McVeigh, E. A. Zerhouni, J. L. Prince, J. A. Lima, "Fast determination of regional myocardial strain fields from tagged cardiac images using harmonic phase MRI," *Circulation*, 101(9):981–988, Mar 7 2000.
36. N. F. Osman, E. R. McVeigh, and J. L. Prince, "Imaging Heart Motion Using Harmonic Phase MRI", *IEEE Trans. on Medical Imaging*, vol. 19, No. 3, pp. 186–202, March 2000.
37. N. F. Osman and J. L. Prince, "Visualizing Myocardial Function Using HARP MRI", *Physics in Medicine and Biology*, vol. 45, no. 6, pp. 1665–1682, June 2000.
38. W. S. Kerwin and J. L. Prince, "On the Optimality of Recursive Unbiased State Estimation with Unknown Inputs", *Automatica*, vol. 36, no. 9, pp. 1381–1383, September 2000.
39. J. Garot, D. A. Bluemke, N. F. Osman, C. E. Rochitte, E. A. Zerhouni, J. L. Prince, J. A. C. Lima, "Transmural Contractile Reserve After Reperfused Myocardial Infarction in Dogs," *Journal of the American College of Cardiology*, vol. 36, no. 7, pp. 2339–2346, 2000.
40. N. F. Osman, S. Sampath, E. Atalar, and J. L. Prince, "Imaging longitudinal cardiac strain on short-axis images using strain-encoded MRI", *Magnetic Resonance in Medicine*, vol. 46, no. 2, pp. 324–334, 2001.

41. M. E. Rettmann, X. Han, and J. L. Prince, "Automated sulcal segmentation using watersheds on the cortical surface," *NeuroImage*, vol. 15, no. 2, pp. 329–344, February 1, 2002
42. X. Han, C. Xu, U. Braga-Neto, and J. L. Prince, "Topology Correction in Brain Cortex Segmentation Using a Multiscale, Graph-Based Algorithm," *IEEE Trans. Medical Imaging*, vol. 21, no. 2, pp. 109–121, Feb. 2002.
43. X. Tao, J. L. Prince, and C. Davatzikos, "Using a Statistical Shape Model to Extract Sulcal Curves on the Outer Cortex of the Human Brain", *IEEE Trans. on Medical Imaging*, vol. 21, no. 5, pp. 513–524, May 2002.
44. W. S. Kerwin and J. L. Prince, "Kriging Filters for Space Time Interpolation," by invitation from Dr. Peter Hawkes, *Advances in Imaging and Electron Physics*, 124:139–193, November 2002.
45. D. L. Kraitchman, S. Sampath, E. Castillo, J. A. Derbyshire, D. A. Bluemke, B. L. Gerber, J. L. Prince, N. F. Osman, "Quantitative Ischemia Detection During Cardiac Magnetic Resonance Stress Testing Using Real-time FastHARP," *Circulation*, vol. 107, no. 15, pp. 2025–2030, 22 April 2003.
46. X. Han, C. Xu, and J. L. Prince, "A topology preserving level set method for geometric deformable models," *IEEE Trans. Patt Anal. Mach. Intell.*, vol. 25, no. 6, pp. 755–768, June 2003.
47. S. Sampath, J.A. Derbyshire, E. Atalar, N.F. Osman, and J. L. Prince, "Real-Time Imaging of Two-dimensional Cardiac Strain Using a Harmonic Phase Magnetic Resonance Imaging (HARP-MRI) Pulse Sequence" *Magnetic Resonance in Medicine*, vol. 50, no. 1, pp. 154–163, July 2003.
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183. P. Nyquist, M. Bigel, L. Yanek, T. F. Moy, B. G. Kral, J. Prince, D. M. Becker, L. C. Becker, D. Vaidya, "The Distribution of White Matter Hyperintensities by Age in Persons with Familial Cardiovascular Risk," International Stroke Conference of the American Heart Association, Abstract WMP50, Honolulu, 6-8 February 2013.
184. E. Murano, L. Pan, H. Quon, H. Starmer, B. Jones, J. Palmer, and J. Prince. "3D-Real-Time and Tagged Swallowing MRI In Humans – A Quantitative Dynamic Study", 21<sup>st</sup> Dysphagia Research Society Annual Meeting, Seattle, WA 13-16 March 2013.
185. J. Oh, S. Saidha, M. Chen, S. Smith, J. Prince, C. Jones, P. Van Zijl, M. Diener-West, D. Reich, and P. Calabresi, "Relative Clinical Utility of Quantitative MRI Measures in the Spinal Cord in Multiple Sclerosis Patients," American Academy of Neurology 65th Annual Meeting, San Diego, March 16-23, 2013
186. J. Oh, M. Seigo, S. Saidha, E. Sotirchos, K.M. Zackowski, M. Chen, J. Prince, M. Diener-West, P.A. Calabresi, and D.S. Reich, "Normalization of the Spinal Cord in Multiple Sclerosis", poster presentation, American Academy of Neurology 65th Annual Meeting, March 16-23, San Diego, 2013.
187. J. Woo, J. Lee, J. Bogovic, E.Z. Murano, F. Xing, M. Stone, and J.L. Prince, "Multi-subject atlas built from structural tongue magnetic resonance images," International Congress on Acoustics (ICA), Montreal, June 6, 2013.
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189. Murano EZ, Woo J, Lee J, Pan L, Xing F, Stone M, Prince J, Honda K. In vivo 3D tongue muscle anatomy based on high-resolution MRI. 42nd Annual Symposium of the Voice Foundation - Care of the Professional Voice, Philadelphia, PA, May 29-June 2, 2013.
190. Murano EZ, Xing F, Woo J, Junghoon L, Zhuo J, Gullapalli R, Ord RA, Stone M, Prince JL. Primary Compensatory Speech Strategy in Post-Glossectomy Patients - a 4D MRI study. 10th International Conference on Advances in Quantitative Laryngology, Voice and Speech Research (AQL) Cincinnati, OH, June 3-4, 2013.
191. B. Jedynak, Z. Ye, A. Lang, R. Tang, C. P. Jedynak and J. Prince, "The Alzheimer's Disease Progression Score (ADPS) can predict the transition from MCI to AD." Alzheimer's Association International Conference 2013, Alzheimer's Association, Boston, MA, July 2013.
192. D. Song, Y. Le, J. Lee, N. Kuo, A. Robinson, A. Dequet, E. Burdette, G. Fichtinger, and J. Prince, "Dynamic dosimetry using ultrasound-fluoroscopy registration identifies cold spots

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193. A.K. Knutsen, E. Magrath, J. McEntee, J. Prince, P. Bayly, J. Butman, and D. Pham, "Improved measurement of brain deformation during a mild acceleration using tagged MRI," 31<sup>st</sup> Annual National Neurotrauma Symposium, Nashville, TN, 4-7 August 2013.
  194. A.D. Pedersen, J. Hwang, J. Woo, F. Xing, J.L. Prince, and M. Stone, "An MRI comparison of /s/ production in four subject conditions," The Acoustical Society of America Annual Meeting, San Francisco, 2-6 December 2013.
  195. P. Nyquist, M. Bilgel, L.R. Yanek, T.F. Moy, L.C. Becker, J.L. Cuzzocreo, D.M. Yousem, J. Prince, D.M. Becker, B.G. Kral, and D. Vaidya, "Age associated brain volume is more closely correlated to periventricular than deep white matter disease," International Stroke Conference of the American Heart Association, Abstract 110, Stroke, vol. 45, San Diego, 12-14 February 2014.
  196. P. Nyquist, L.R. Yanek, M. Bilgel, J.L. Cuzzocreo, L.C. Becker, K. Chevalier, T. Woessner, J. Prince, D.M. Becker, "Manipulative dexterity is associated with occult white matter ischemic lesions in healthy asymptomatic persons at increased risk for cardiovascular disease," , International Stroke Conference of the American Heart Association, Abstract 109, Stroke, vol. 45, San Diego, 12-14 February 2014.
  197. O.Y. Mian, Y. Le, A. Robinson, J.L. Prince, J. Lee, and D.Y. Song, "A Prospective Study of Registered Ultrasound and Fluoroscopy for Intraoperative Dose Calculation: Improved Accuracy Compared to Current Ultrasound-based Intraoperative Dosimetry", 2014 Brachytherapy Society (ABS) Annual Meeting, San Diego, 3-5 April 2014.
  198. P. Bhargava, A. Lang, O. Al-Louzi, A. Carass, S. Saidha, J. Prince, and P. Calabresi, "Cross-platform Comparison of Retinal Neuronal Layers in Multiple Sclerosis utilizing a Novel Open-Source Optical Coherence Tomography Automated Segmentation Algorithm", American Academy of Neurology 66<sup>th</sup> Annual Meeting, Philadelphia, PA, April 26—May 3, 2014.
  199. J. Woo, F. Xing, M. Stone, and J. L. Prince, "Determining functional units of tongue motion from magnetic resonance imaging", 167<sup>th</sup> meeting of the Acoustical Society of America, Providence, Rhode Island, May, 2014.
  200. F. Xing, J. Woo, J.K. Ziemba, M. Stone, and J. L. Prince, "Tracking four dimensional muscle mechanics from high-resolution and tagged magnetic resonance imaging", 167<sup>th</sup> meeting of the Acoustical Society of America, Providence, Rhode Island, May 2014.
  201. J.K. Ziemba, M. Stone, A.D. Pedersen, J. Woo, F. Xing, and J.L. Prince, "Internal three dimensional tongue motion during /s/ and /j/ from tagged magnetic resonance imaging: control and glossectomy motion", 167<sup>th</sup> meeting of the Acoustical Society of America, Providence, Rhode Island, May 2014
  202. P. Bhargava, A. Lang, O. Al-Louzi, A. Carass, S. Saidha, J. Prince, P. Calabresi, "Cross-platform comparison of retinal layers in multiple sclerosis utilizing a novel open-source optical coherence tomography automated segmentation algorithm," Cooperative Meeting of the Consortium of Multiple Sclerosis Centers (CMSC) and Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS), Dallas, TX, 28-31 May 2014.
  203. J. Oh, M. Chen, S. Newsome, M. Diener-West, K. Zackowski, C. Jones, P. Van Zijl, J. Prince, D. Reich, P. Calabresi, "Longitudinal change in quantitative spinal cord MRI in multiple sclerosis patients: preliminary results of a 2-year study," Joint ACTRIMS-ECTRIMS Meeting, Boston, 2014.
  204. N. Kuo, E. Dehghan, Y. Le, A. Deguet, E. Burdette, G. Fichtinger, J. Prince, D. Song, and J. Lee, "SU-D-BRF-07: Ultrasound and fluoroscopy based intraoperative image-guidance system for

- dynamic dosimetry in prostate brachytherapy,” Fifty-sixth Annual Meeting of the American Association of Physicists in Medicine, Medical Physics, vol. 41, no. 6, pg. 116, 01 June 2014.
205. J. Oh, E. Sotirchos, S. Saidha, A. Whetstone, M. Chen, S. Newsome, K. Zackowski, J. Prince, M. Diener-West, D. Reich, and P. Calabresi, “Relationships between quantitative spinal cord MRI and retinal layers in multiple sclerosis,” Annual Meeting of the American Academy of Neurology, Neurology, vol. 82, no. 10 supplement, pg. S54.004, 01 May, 2014.
  206. M. Bilgel, Y. An, Y. Zhou, D.F. Wong, J. L. Prince, and S.M. Resnick, “APOE e4 allele is associated with an earlier onset of amyloid accumulation,” Human Amyloid Imaging Conference, Abstract ID36, Miami, 14-16 January 2015. (Oral presentation.)
  207. M. Bilgel, S.M. Resnick, D.F. Wong, B. Jedynak, and J.L. Prince, “Temporal progression of cerebral amyloid deposition as measured by 11C-PiB PET imaging,” Human Amyloid Imaging Conference, Abstract ID36, Miami, 14-16 January 2015.
  208. A. Lang, A. Carass, A.K. Bittner, H.S. Ying, and J.L. Prince, “Automated segmentation of macular SD-OCT scans of retinitis pigmentosa patients shows regional patterns of foveal inner retinal thickening that correlate with visual function,” ARVO Annual Meeting, Powerful Connections: Vision Research and Online Networking, Denver, CO, 3-7 May 2015.
  209. M. Bilgel, Y. An, Y. Zhou, D.F. Wong, J.L. Prince, S.M. Resnick, “Age at onset of amyloid accumulation in relation to Apoe genotype”, 2015 Alzheimer’s Association International Conference, (AAIC 2015), Washington DC, 19-23 July 2015. (Oral Presentation.)
  210. S. Reaungamornrat, T. De Silva, A. Uneri, J.-P. Wolinsky, A. J. Khanna, G. Kleinszig, S. Vogt, J. L. Prince, and J. H. Siewerdsen, MIND Demons for MR-to-CT Deformable Image Registration in Image-Guided Spine Surgery, 5th Annual Hopkins Imaging Conference, October 26th, 2015
  211. O. Al-Louzi, J. Button, A. Lang, P. Bhargava, S. Newsome, A. Carass, L. Balcer, E. Frohman, J. Prince, P. Calabresi, S. Saidha. “Disease modifying therapies modulate retinal layer atrophy in multiple sclerosis: a longitudinal study.” 31st Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRMS 2015), Barcelona, Spain, Oct. 2015.
  212. M. Bilgel, Lori Beason-Held, D. Wong, B. Jedynak, J. Prince, S. Resnick, “Patterns of longitudinal cerebral amyloid and blood flow changes,” Conference on Human Amyloid Imaging, Miami, Florida, 13-15 January 2016.
  213. S Reaungamornrat, T De Silva, A Uneri, J-P Wolinsky, A J Khanna, G Kleinszig, S Vogt, J L Prince, J H Siewerdsen, "Clinical Application of the MIND Demons Algorithm for Symmetric Diffeomorphic Deformable MR-To-CT Image Registration in Spinal Interventions," 2016 AAPM Annual Meeting, 2016/08/04, Washington DC.
  214. J. Button, O. Al-Louzi, A. Lang, P. Bhargava, S. Newsome, L. Balcer, E. Frohman, J. Prince, P. Calabresi, S. Saidha. “Disease modifying therapies modulate retinal atrophy in multiple sclerosis: A retrospective study.” AAN Annual Meeting 2016, American Academy of Neurology, Vancouver, BC, Canada, April 2016.
  215. B.J. Antony, B.-J. Kim, D.J. Zack, P.A. Calabresi, and J.L. Prince, “Using volumetric SD-OCT images in a multiple sclerosis mouse model,” ARVO: The Association for Research in Vision and Ophthalmology, Annual Meeting, Seattle, May 1-5, 2016.
  216. A. Lang, A. Carass, A. Bittner, J. Prince, H. Ying. “Automated segmentation of eight layers in 3D SD-OCT scans of retinitis pigmentosa patients and the relationship of GCL+IPL thickness to visual function.” ARVO 2015 Annual Meeting, Association for Research in Vision and Ophthalmology, Denver, CO, May 2015.
  217. Omar Y. Mian, Carol Gergis, Adam Ferro, Yi Le, Scott Robertson, Robert Hobbs, Jerry L. Prince, Todd McNutt, Theodore L. DeWeese, Junghoon Lee, Daniel Y. Song, “A Prospective Study of 80 patients Evaluating Registered Ultrasound and Fluoroscopy (RUF) For Intraoperative Dose Calculation: Improved Accuracy Compared To Conventional Ultrasound-based Intraoperative Dosimetry.” ASTRO, 2016.

## PATENTS

1. Method of Employing Angle Images for Measuring Object Motion in Tagged Magnetic Resonance Imaging, Jerry L. Prince and Nael F. Osman, U.S. Patent No. 6,435,187. Issued 17 September 2002.
2. Method for Harmonic Phase Magnetic Resonance Imaging (HARP-MRI), Jerry L. Prince and Nael F. Osman. U.S. Patent No. 6,597,935. Issued 22 July 2003.
3. Cardiac Motion Tracking Using CINE Harmonic Phase (HARP) Magnetic Resonance Imaging, Nael F. Osman and Jerry L. Prince, No. 6,892,089, Issued 10 May 2005.
4. Three Dimensional Magnetic Resonance Motion Estimation on a Single Image Plane, Jerry L. Prince, Matthias Stuber, Nael F. Osman, and Khaled A. Abd-Elmoniem, U.S. Patent No, 7,495,438, Issued 24 February 2009.
5. Robotic 5-dimensional ultrasound, Emad M. Boctor, Michael Choti, Gabor Fichtinger, Russell Taylor, and Jerry L. Prince, U.S. Patent No. 7,901,357, Issued 8 March 2011.
6. Methods and Systems for Locating Objects Embedded in a Body, Junghoon Lee, Jerry L. Prince, Christian Labat, Everette C. Burdette, U.S. Patent No. 8,233,686, Issued July 31, 2012
7. Pulse sequence-based intensity normalization and contrast synthesis for magnetic resonance imaging, A. Jog, S. Roy, A. Carass, J.L. Prince, U.S. Patent Application 20150016701, published 01/15/2015.

## INVITED TALKS

1. “Reconstruction of Convex Sets from Support Line Measurements”, Advisory Board Meeting, Center for Intelligent Control Systems, Harvard University, October 8, 1987. Invited by Sanjoy Mitter.
2. “Image Processing Methods for Tagged MR Cardiac Imaging,” SIPI Seminar, University of Southern California, 12 July 1990. Invited by Richard Leahy.
3. “Segmentation Methods in 3D Imaging.” In 3D Neuroimaging: Theory and Clinical Applications, a professional course offered by The Department of Radiology and Radiological Sciences, The Johns Hopkins Medical Institutions, October 30, 1990. Invited by James Zinreich.
4. “Vector Tomography,” in Optical Society of America Topical Meeting on Signal Recovery and Synthesis, Salt Lake City, March 1995. Invited by Tim Schultz.
5. “Image Processing Methods in Tagged Magnetic Resonance Imaging,” in the IS&T Conference, Washington, D. C., May 1995. Invited by Jan Allebach.
6. “Stochastic Motion Models in Tagged Cardiac MRI,” in Workshop on Pattern-Theoretic Knowledge Representation, St. Louis, April 18–19, 1996. Invited by Michael Miller.
7. “Cardiac Motion From Low-frequency MR tags,” in Cardiovascular Science and Technology Conference, Washington D. C., May 2–4, 1996. Invited by Elliot McVeigh.
8. “Image Analysis for MR Imaging of the Brain,” Biomedical Engineering Seminar, The Johns Hopkins University, Baltimore, October 10, 1996. Invited by Murray Sachs.
9. “Image Analysis for MR Imaging of the Brain,” Siemens Corporate Research and Development, Princeton, NJ, March 5, 1997. Invited by Gareth Funka-Lea.
10. “Magnetic Resonance Beads in Your Heart?” Mathematical Sciences Seminar, Whiting School of Engineering Young Faculty Series, The Johns Hopkins University, Baltimore, March 13, 1997. Invited by James Fill.
11. “Vector Tomography on Bounded Domains”, Stochastic Systems Group, Massachusetts Institute of Technology, Cambridge, MA, April 3, 1997. Invited by Alan Willsky.

12. "Material Beads From Tagged Magnetic Resonance Imaging of the Heart", School of Electrical and Computer Engineering, Purdue University, IN, April 16, 1997. Invited by Jan Allebach.
13. "Motion Analysis in Medical Imaging Applications", Short Course for International Conference on Image Processing, October 4, 1998. Invited by Nikolas P. Galatsanos.
14. "Progress in Automated Estimation of Cortical Geometry," Radiology, National Institutes of Health, March 24, 1999. Invited by R. Nick Bryan.
15. "Measuring Heart Motion Using Tagged Magnetic Resonance Imaging," Whiting School of Engineering, Inaugural Professorial Lecture, April 26, 1999. Invited by Ilene Busch-Vishniac.
16. "Motion estimation methods in cardiac magnetic resonance imaging," Information Sciences and Systems Seminar, Department of Electrical Engineering, Princeton University, May 27, 1999. Invited by Stuart Scwhartz.
17. "Analyzing Cardiac Motion Using Harmonic Phase (HARP) MRI," Laboratory for Cardiac Energetics, National Heart, Lung, and Blood Institute, December 13, 1999. Invited by Bob Balaban.
18. "Analyzing Cardiac Motion Using Harmonic Phase (HARP) MRI," Medtronic Corporation, May 23, 2000. (Invited by Walt Baxter.)
19. "On the relationship between parametric and geometric active contours and its applications," 34th Asilomar Conf. on Sig. Sys. Comp., Pacific Grove CA, October 29, 2000. Invited by Anthony Yezzi.
20. "Discovering brain cortex geometry from MR images," IEEE CS-EMB Int. Symp. on Bioinformatics and Biomedical Engineering, Nov. 9, 2000. Dinner Keynote Speaker. Invited by Nikolaos Bourbakis.
21. "Topological Correction for Brain Cortex Segmentation," GRASP Laboratory Seminar, University of Pennsylvania, December 15, 2000. Invited by Jim Gee.
22. "HARP in Ischemic Heart Disease," ISMRM weekend course on Cardiac MR Innovations and Advances, Glasgow Scotland (30 minutes), 21 April 2001. Invited by Roderic Pettigrew.
23. "The Analysis of Brain Structure," Overview Talk (20 minutes), 2001 Workshop on Information Processing in Medical Imaging (IPMI'01), 22 June 2001, Davis CA. Invited by Michael Insana.
24. "Rapid imaging of cardiac strain using magnetic resonance," Siemens Corporate Research Seminar (1 hour), 19 November 2001, Princeton NJ. Invited by Nikos Paragios.
25. "Recent Advances in Cardiac Imaging using HARP MRI," Invited Keynote Talk, IEEE Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA 2001), 10 December 2001, Kauai, Hawaii. Invited by Lawrence Staib.
26. "Toward Real-time Imaging of Myocardial Strain, Invited Talk," CIMIT Forum Presentation, Boston MA, 8 October 2002.
27. "Toward Real-time Imaging of Myocardial Strain," Invited Talk, CISST/ERC Seminar, Johns Hopkins University, 9 October 2002. Invited by Russell H. Taylor.
28. "Advances in Imaging Myocardial Strain using HARP," Bioengineering Seminar, Beckman Institute, University of Illinois, Urbana Champaign, IL, 9 October 2003. Invited by Zhi-Pei Liang.
29. "Recent Advances in Imaging Heart Motion and Strain," Biomedical Engineering Seminar, University of Virginia, 16 January 2004. Invited by Fred Epstein.
30. "Topologically Correct Brain Cortex Segmentation," AI Lab, Massachusetts Institute of Technology, 24 April 2004. Invited by Polina Golland.
31. "Topologically Correct Brain Cortex Segmentation," Biomedical Engineering, Yale University, 21 April 2004. Invited by Mark Saltzman.

32. "Cortical Surface Segmentation and Topology," Computer Integrated Surgical Systems and Technology ERC, 30 November 2004. Invited by Takintope Akinbiyi, President, CISRS Student Research Society.
33. "Measuring Material Motion in the Heart using Slice Following Harmonic Phase (SF-HARP) Imaging," Department of Radiology Research Seminar, University of Pennsylvania, 13 January 2005. Invited by Christos Davatzikos.
34. "Cortical Surface Alignment Using Optical Flow in an Eulerian Framework," Numerical Analysis Seminar, University of Maryland College Park, Department of Mathematics, Invited by Ricardo Nochetto.
35. "Cortical Reconstruction Using Implicit Surface Evolution (CRUISE) ... And More," Distinguished Lecture Series, Electrical Engineering Department, USC, 3 February 2006. Invited by Richard Leahy.
36. "Imaging three-dimensional motion in the heart using zHARP," Institute for Pure & Applied Mathematics Workshop on Heart Modeling: Image Acquisition. Segmentation, Modeling and Analysis, UCLA, 8 February 2006. Invited by Mark Green.
37. "Cortical Reconstruction and Geometry Estimation Using Implicit Surface Evolution (CRUISE)," Neuroimaging Core Lecture Series, National Institute of Mental Health, April 19, 2006. Invited by Andreas Meyer-Lindenberg.
38. "Tracking three-dimensional motion in the heart using zHARP," Barr Systems Distinguished Lecture Series, Department of Computer Science, University of Florida, Gainesville, 24 February 2006. Invited by Baba Vemuri.
39. "MR Tagging Technology," 7:30am Resident Lecture, Department of Radiology, University of Maryland School of Medicine, Baltimore, 8 March 2006. Invited by Reuben Mezrich.
40. "New Strategies in Tagged Cardiac MRI," Grand Rounds, Department of Radiology, University of Maryland School of Medicine, Baltimore, 8 March 2006. Invited by Rueben Mezrich.
41. "Topology Preservation in Cortical Reconstruction Using Implicit Surface Evolution," Information Sciences and Systems (ISS) Seminar, Department of Electrical and Computer Engineering, Princeton University, 16 November 2006. Invited by Peter Ramadge.
42. "My Teaching Style," Johns Hopkins CISST-ERC Student's Seminar, 17 November 2006. Invited by Cynthia Ramey.
43. "Imaging Heart Motion Using Magnetic Resonance," General Dynamics Distinguished Seminar Series, University of Michigan, Department of Electrical Engineering and Computer Science, 19 January 2007. Invited by Kim Winick.
44. "Micro and Macro Structure from Diffusion Weighted MRI," IPAM Institute Workshop on Image Analysis Challenges in Molecular Microscopy, UCLA, 31 January 2008. Invited by Guillermo Sapiro.
45. "Imaging the Cerebellum," Chesapeake Ataxia Center Annual Meeting, 16 February 2008. Invited by Sarah Ying.
46. "Research Grant Writing," Johns Hopkins CISST-ERC Student's Seminar, 22 February 2008. Invited by Cynthia Ramey.
47. "HARP MRI Techniques for Imaging Tongue Motion," Int'l Symposium on Biomechanics, Healthcare, and Information Science (ISBHIS), Guest Speaker, 14 March 2008, Kanazawa Japan. Invited by Jianwu Dang of the Japan Advanced Institute of Science and Technology.
48. "Cardiac Motion Correction and Tracking," International Society of Magnetic Resonance in Medicine, Annual Meeting, Tutorial Sessions, 3 May 2008, Toronto, Invited by Vince Calhoun of Univ of New Mexico.



49. "Deformable Models with Topological Preservation on Octree Grids," SIAM Minisymposium on Segmentation and Data Mining, Part I of II, 10 July 2008. Invited by Carole Le Guyader of INSA de Rennes, France.
50. "Direct Quantification of Three-Dimensional Strain in the Heart Using zHARP," Minisymposium: Computational Science and Biology: The Challenges, Data Methods and Tools—Part II of II, SIAM Conf on Imaging Science. 7 July 2008. Invited by Luminita Vese of University of California, Los Angeles.
51. "Registration: DTI & HARDI," 11<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), Tutorial Session entitled Diffusion MRI: Technology Trends and Unsolved Problems, 6 September 2008. Invited by Ragini Verma of University of Pennsylvania.
52. "Segmentation and Labeling of Brain Anatomy," Cairo Int'l Biomedical Engineering Conference (CIBEC), 18 December 2008. Plenary Talk, Invited by Bassel Tawfik of Cairo University.
53. "Atlas and Discrete Tomography Based 3D Reconstructions," in MICCAI 2009 Tutorial on Medical Robotics and Computer Assisted Intervention, 24 September 2009, Invited by Ameet K. Jain of Philips Research North America.
54. "Automatic Labeling in Diffusion Weighted Imaging," Biomedical MR Lab Seminar, Radiology, Washington University, 21 January 2010. Invited by Joe Ackerman.
55. "High Resolution Cardiac Strain in a Signal Breath-hold Using TruHARP," WUSAIR Speaker, Mechanical Engineering, Washington University, 22 January 2010. Invited by Philip Bayly.
56. "Image Segmentation of Multiple Objects and Their Compartments," Space Telescope Presentation, Space Telescope Science Institute, Baltimore, MD, 2 March 2010. Invited by Alberto Conti.
57. "Developments in Cardiac Motion and Strain Analysis Using MR Tagging," Keynote speaker at University of Pennsylvania Radiology Retreat, 13 May 2010. Invited by Christos Davatzikos.
58. "Segmentation and Labeling in Neuroimaging," given in three 2-hour lectures at the 2010 IEEE EMBS International Summer School on Biomedical Imaging, Berder Island, Brittany, France, 18-26 June 2010. Invited by Christian Roux and Jean-Louis Coatrieux.
59. "Image Segmentation of Multiple Objects with Topology Control," Biomedical Sciences Seminar, Diagnostic Radiology, Yale University, 14 September 2010. Invited by Smita Sampath.
60. "Atlas-based approach to MR intensity normalization, contrast synthesis, and inhomogeneity correction," CSAIL Colloquium, Massachusetts Institute of Technology, 7 October 2010. Invited by Polina Golland.
61. "Image Analysis Methods in the Java Image Science Toolkit", Johns Hopkins School of Medicine, Nuclear Medicine Division of Radiology, 18 October 2011, Invited by Arman Rahmim.
62. "Multi-object segmentation for anatomical parcellation of brain anatomies," Biomedical Image Analysis Summer School: Modalities, Methodologies, and Clinical Research, Ecole Centrale de Paris and Ecole des Ponts-ParisTech, 9 July 2012. Invited by Nikos Paragios.
63. "24 Years of Tagged Magnetic Resonance Imaging at Johns Hopkins," The William B. Kouwenhoven Memorial Lecture, Introduced by Russell H. Taylor. Department of Electrical and Computer Engineering, Johns Hopkins University. 11 October 2012, Invited by Jin Kang.
64. "Advances in MR Tagging and New Applications," Philips Research North America, August 8, 2013. Invited by Ehsan Dehghan.

65. "Grantsmanship Best Practices," National Institute on Biomedical Imaging and Bioengineering (NIBIB), June 6, 2014. Invited by Zeynep Erim.
66. "Sparse reconstruction from an overcomplete patch dictionary for image synthesis," in S-T2: Generative and Discriminative Learning for Medical Imaging, a tutorial associated with the MICCAI 2014 conference, September 14, 2014. Invited by S. Kevin Zhou.
67. "Medical Imaging Synthesis Methods and Applications," University of Utah Bioengineering Department Distinguished Lecture Series. November 14, 2014. Invited by Sarang Joshi and Ed Hsu.
68. "Medical Image Synthesis Methods and Applications," Massachusetts General Hospital (MGH). November 13, 2015. Invited by Jonghye Woo.

## RESEARCH SUPPORT

### **Past Support**

1. Principal Investigator, "Geometric Reconstruction For Limited-Angle Tomography," The John von Neumann National Supercomputer Center, Research Initiation Grant, 3/02/89–3/02/90: received 20 hours of supercomputer time.
2. Principal Investigator, "Multiparametric SAR Imaging of the Ocean," The Johns Hopkins Applied Physics Laboratory, 6/01/90–8/30/91: \$74,655.
3. Principal Investigator, "Computed Tomography Theory for Composite Graphite Materials", The Johns Hopkins Center for Nondestructive Evaluation, 12/01/91–5/31/92: \$3,900.
4. Co-Investigator, "BRAIN MAP: A Database of Human-Brain Function and Structure Created and Accessed from Tomographic Images," PI: R. N. Bryan, IBM Corporation, 12/1/90–8/31/92: two IBM RS6000 workstations and \$60,000.
5. Co-Investigator, "1.5T Echo Planar Gradient Probe", PI: E. A. Zerhouni, The National Institutes of Health, Shared Instrumentation Grant, nine investigators, 4/27/93–4/26/94: shared equipment valued at \$400,000.
6. Principal Investigator, "Cardiac Motion Analysis Using MR Tagging and Optical Flow," The Whitaker Foundation of Mechanicsburg, Pennsylvania, 6/01/91–5/31/94: \$179,707.
7. Co-Investigator, "Partial Volume Correction in PET Imaging in Aging", PI: J. J. Frost, The National Institutes of Health, 7/01/92–03/31/95: received 15% salary for three years and one graduate student's tuition and salary for two years out of a \$1,130,278 grant.
8. Principal Investigator, "Optical Flow Implementation for Data Explorer on the Power Visualization Server", IBM, 10/1/92–1/31/93: \$5,000.
9. Co-Principal Investigator, "Geometric Modeling for Three-Dimensional Medical Imaging," (with L. Wolff), Whiting School of Engineering, The Johns Hopkins University, Young Faculty Research Initiative, 9/01/94–1/31/96: received \$10,000 out of a \$20,000 grant.
10. Co-Investigator, "Spatially Oriented Database for Digital Brain Images", PI: S. Letovsky, National Institutes of Health, 9/30/95–6/30/98: received 5% salary for two years out of a \$762,446 grant.
11. Principal Investigator, "1993 Presidential Faculty Fellow Award", National Science Foundation, 1/15/94–12/31/99: \$500,000.
12. Principal Investigator, "Optical Flow Analysis For Tagged Cardiac MR Imaging", National Heart Lung and Blood Institute, NIH, FIRST Program, 8/01/94–7/31/99: \$572,801.
13. Co-Principal Investigator, "CISE Research Instrumentation", Co-PI: J. I. Goutsias, National Science Foundation, 10/01/97–01/31/99: sharing equipment valued at \$110,000 (plus \$55,000 matching funds from The Johns Hopkins University, Whiting School of Engineering).

14. Co-Investigator, "Dynamic 3-D tagged MR imaging of the cardiac cycle in ischemia", PI: E. Zerhouni, National Institutes of Health, 7/01/90–6/30/95: received 15% salary for four years, 5% for one year, and one graduate student's tuition and salary for two years out of a \$2,288,931 grant. Competitive renewal funded for 7/01/95–6/30/00: received 5% salary out of a \$2,651,276 grant.
15. Co-Investigator, "A Vector Wiener Filter for Dual-Isotope SPECT" PI: J. Links, National Institutes of Health, 8/19/97–6/30/01: received 10% salary and one graduate student's tuition and salary out of a \$485,241 grant.
16. Investigator, "Scalable High Performance Computing Applications," PI: T. O. Poehler, Intel Corporation, 10/1/97–12/31/2000: receiving equipment valued at \$269,000 out of a \$3,133,732 grant.
17. Principal Investigator, "Automated 3D analysis of cortical geometry in MR images", National Institute of Neurological Disorders and Stroke, NIH, 5/1/98–4/30/02, \$836,706.
18. Co-Investigator, "Regional Dysfunction by MRI in Incident Heart Failure", National Heart, Lung, and Blood Institute, NIH, 07/01/01–06/30/05, 3% salary out of \$2,066,247 total costs.
19. Co-Investigator, "Elastographic Visualization of Hepatic Thermal Ablation," The Sidney Kimmel Comprehensive Cancer Center At Johns Hopkins, 05/01/03 – 04/30/04, \$40,000 direct cost. 0% salary.
20. Co-Investigator, "Comprehensive Validation of Cardiac SPECT Reconstruction", National Heart, Lung, and Blood Institute, NIH, 12/01/2001–11/30/2006, approx. \$1.2 million in total funds, received 5% salary.
21. Principal Investigator, "Reconstruction of Pelvic Bone in Limited-angle Cone-beam Tomography," Siemens Corporate Research, 07/01/00–8/31/07, \$182,000 total costs.
22. Principal Investigator, "Prior Knowledge in 3D Reconstruction from 2D X-Rays", National Institute of Biomedical Imaging & Bioengineering, NIH, 08/01/04–07/31/08, \$605,456 (TC).
23. Principal Investigator, "Analysis of Tongue Motion During Speech Using HARP-MRI", University of Maryland Dental School, 01/01/2002–06/30/2007, subcontract on NIH grant with PI: Maureen Stone. \$205,797 on subcontract.
24. Co-Investigator, "Strain-Encoded MR for Direct Imaging of Cardiac Function," National Heart, Lung, and Blood Institute, NIH (PI: N.F. Osman), 8/7/2003–7/31/2008, 5% salary, \$225,000 (ADC).
25. Principal Investigator, "Development of a Resource for High Angular Resolution Imaging HARDI," F.M. Kirby Center for Functional Brain Imaging, 6/4/2007 – 5/31/2008, 10 hours of imaging time.
26. Co-Investigator, "Engineering Research Center for Computer-Integrated Surgical Systems and Technology," PI: R. Taylor, National Science Foundation, 9/1/1998–5/31/2009: 8% salary and two graduate student's tuition (one past) and salary out of a \$12M grant.
27. Principal Investigator, "Automated 3D analysis of cortical geometry in MR images", National Institute of Neurological Disorders and Stroke, NIH, 1/1/2003–11/30/2009, \$2,043,750 total costs.
28. Principal Investigator, "Information Processing in Medical Imaging 2009", National Institutes of Health/NIBIB co-funded by NCI and NINDS, R13 mechanism, \$22,000.
29. Principal Investigator, "Harmonic Phase MRI for Ultrafast Cardiac Strain Imaging", National Heart, Lung, and Blood Institute, NIH, 08/01/1999–07/31/2010, \$3,225,243.
30. Investigator, "Cortical Reconstruction and Analysis Software," (PI: D.L. Pham), 01/01/06–12/31/10, 1R01NS054255.

31. Investigator, "Bioengineering Research Partnership", 5P01CA067165, (PI: C. Tempany), 06/01/07-05/31/12.
32. *Principal Investigator*, "REU Site for Computer Integrated Surgical Systems and Technology," NSF/EEC Award Number 0649069, 5/1/2007 – 4/30/2011, \$100,632.
33. *Investigator*, "High-performance cone-beam CT guidance of head and neck surgery," (PI: J. Siewerdsen), 08/01/2009-7/31/2011.
34. Principal Investigator, "Multiple q-Shell Diffusion Imaging of the Peripheral Nervous System," Siemens Medical Solutions, 9/15/2007-9/15/2012, \$81,672.
35. Principal Investigator, "Robust Cerebrum and Cerebellum Segmentation for Neuroimage Analysis." National Institutes of Health, R21 mechanism, 07/01/09-06/30/12 \$450,333.
36. Principal Investigator, "An interactive web-based game for collaborative labeling of medical images," 1R21NS064534, 6/15/09-05/31/12.
37. Investigator, "Speech Production after Tongue Cancer Surgery: Flap or No Flap?" (PI: M. Stone), National Institutes of Health, R01CA133015, 07/01/09-06/30/14, \$3,079,420. (Subcontract to Prince@JHU = \$513,315).
38. Investigator, "Intraoperative dose visualization using x-ray and ultrasound for prostate brachytherapy," 1R01CA151395. (PI: D. Song), 07/01/2010-04/30/2014, NIH/NCI. This grant merges novel image guidance provided from transrectal ultrasound and x-ray fluoroscopy in order to provide visualization of both the prostate and the implanted seeds so that dose can be assessed and adjusted and optimized during the brachytherapy procedure.
39. Principal Investigator, "MR Image Example-based Contrast Synthesis for Consistent Image Analysis," 1R21EB012765-01A1, 07/01/2011-06/31/2013, \$434,617 (TC).
40. Principal Investigator, "Coupled level set framework for retinal segmentation and atlas in SD-OCT, 1R21EY022150-01, 12/01/2011—11/20/2014, \$437,160 (TC). Development of automated segmentation and atlas techniques for spectral domain optical coherence tomography. Analysis of OCT scans of MS, ataxia, and glaucoma patients. (Nickname: OCT R21)
41. Investigator, "Brain Image Analysis Tools for Quantitative Longitudinal Assessment of Multiple Sclerosis," NIH/NINDS R01NS070906 (PI: Pham), 07/01/10-06/30/16, \$1,703,006 (TC). The goal of this project is to develop accurate and robust image analysis tools for automatic quantification in longitudinal magnetic resonance imaging studies of multiple sclerosis. (Nickname: MS grant)
42. Principal Investigator, "Segmentation and volumetric quantification of thalamic nuclei for assessing MS," R21NS082891, 05/01/2013—05/30/2016, \$424,779 (TC). This grant will develop a technique for automatic parcellation of the thalamus in normal and MS subjects and will evaluate differences and changes in thalamic nuclei volumes. (Nickname: Thalamus Grant)

## Current Support

43. Principal Investigator, "Automatic Cerebellar MRI Labeling in Health and Disease," National Institute of Neurological Disorders and Stroke, NIH 1R01NS056307, 5/10/2006-1/31/2017, \$2,984,226 (TC). To develop methods for automatic labeling of the cerebellum using 3D registration and segmentation methods, and to conduct a pilot study on cerebellar ataxia patients in order to relate the volume of cerebellar lobules to neurological test scores.
44. Site Principal Investigator, "In Vivo Measurement of Brain Biomechanics," R01 NIH 2R01NS0556307, PI: Phil Bayly. Total costs = \$2,941,856 (Hopkins subcontract =

- \$646,175). 4/1/2013-11/30/2017. To measure brain motion and properties in living humans using magnetic resonance techniques and to compare this with measurements on cadavers and computer simulations.
45. Principal Investigator, "Multimodal image registration by proxy image synthesis," 1R01EB017743, 09/30/2013-08/30/2017, \$1,038,290 (TC). To develop, validate, and deliver software to carry out multimodal image registration using the concept of image synthesis. The concept will replace mutual information as the standard image similarity method for multimodal registration.
  46. Principal Investigator, "3D segmentation and registration of macular SD-OCT for application in MS," 1R01EY024655, 08/01/2014-06/30/2018, \$1,038,290 (TC). The research will develop segmentation and registration methods for spectral domain optical coherence tomography for application in multiple sclerosis. Methods based on random forests and multi-object geometric deformable models will be developed.
  47. Principal Investigator, "Tongue muscle function after cancer surgery using 4D MRI, DTI, and MR tagging," 1R01DC021717, 07/01/2015-6/30/2020, \$2,042,970 (TC). This grant will develop novel imaging methods to measure muscle fiber orientation in the tongue and will process tagged MRI data together with these fiber orientations to determine strains in the line of action with the moving tongue in speech. Both normal subjects and those who have had partial glossectomy due to tongue cancer will be studied.
  48. Principal Investigator, "Ventricle segmentation and labeling to characterize normal pressure hydrocephalus," 1R21NS096497, 04/01/2016-03/31/2018, \$425,799 (TC). To develop methods to label the ventricles in normal pressure hydrocephalus.

## **STUDENTS ADVISED**

### **Postdoctoral Fellows**

1. Chenyang Xu, 1999-2000
2. Nael Osman, 2000
3. Xiao Han, 2003-2004
4. Duygu Tosun, 2005
5. Vijay Parthasarathy, 2006-2007
6. Christian Labat, 2006-2007
7. Junghoon Lee, 2007-2009
8. Khaled Abd-Elmoniem, 2007-2009
9. Lotta Ellingsen, 2009-2010
10. Ehsan Dehghan, 2010-2012
11. Xinyang, Liu, 2011-2012
12. Jonghye Woo, 2011—October 31, 2014
13. Snehashis Roy, 2012—July 15, 2013
14. Nathanael Kuo, 9/15/2013—3/31/2015.
15. Min Chen, 1/20/2015—6/30/2015.
16. Bhavna Antony, 1/1/2015—present
17. David Gomez, 6/1/2015—present
18. Amod Jog, 2/1/2016—present

## Graduated Doctoral Students

1. Christos A. Davatzikos, Ph.D. August 1994, "Model-Based Boundary Mapping with Applications to Medical Imaging". Current position: Director, Section of Biomedical Image Analysis, Professor of Radiology, University of Pennsylvania.
2. Thomas S. Denney, Jr., Ph.D. August 1994, "Stochastic Estimation of Deformable Motion from Magnetic Resonance Tagged Cardiac Images," Current position: Ed and Peggy Reynolds Family Professor of Electrical Engineering, Auburn University.
3. Sandeep Gupta, Ph.D. January 1998, "Optical Flow Techniques for Cardiac Motion Estimation from Tagged MR Images", Current position: Manager, Biomedical Image Processing Lab at GE Global Research, Albany, NY Area.
4. Chenyang Xu, Ph.D. January 1999, "Deformable Models with Application to Human Cerebral Cortex Reconstruction from Magnetic Resonance Images", Current position: General Manager, Siemens Technology to Business Center (TTB), San Francisco Bay Area, CA.
5. Dzung Pham, Ph.D. June 1999, "Statistical Estimation and Pattern Recognition Methods for Robust Segmentation of Magnetic Resonance Images", Current position: Head of Imaging Core, Henry Jackson Foundation, Bethesda MD.
6. William Kerwin, Ph.D. September 1999, "Space-time Estimation of Left Ventricular Motion from Tagged Magnetic Resonance Images", Current Position: Director of Image and Data Analysis, Presage Biosciences, Inc., Seattle, WA.
7. Nael Osman, Ph.D. March 2000, "Measuring Regional Cardiac Function Using Harmonic Phase Magnetic Resonance Imaging", Current Position: Chief Technical Officer, Myocardial Solutions, North Carolina
8. Maryam Rettmann, Ph.D. (BME) March 2003, "Analysis of Regional Cortical Geometry Using Automated Sulcal Segmentation from a Surface Model of the Human Cerebral Cortex"; Current Position: Research Fellow, Mayo Clinic College of Medicine, Rochester, MN 55905.
9. Xiao Han, Ph.D. October 2003, "Anatomically Consistent Segmentation of Medical Imagery Using a Level Set Method and Digital Topology", Current Position: Senior Research Scientist, Electra, Inc., St. Louis.
10. Smita Sampath, Ph.D. August 2004, "Magnetic Resonance Pulse Sequences for Rapid Imaging of Myocardial Motion and Strain", Current Position: Associate Principal Scientist, Imaging. Merck Sharp & Dohme, Singapore.
11. Xiaodong Tao, Ph.D. February 2005; "Statistical Geodesics and Shape Models: Finding Features for Registering Human Cortical Surfaces." Current Position: Chief Solutions Architect, Radiology Solutions, Philips Health Systems, Boston, USA.
12. Duygu Tosun, Ph.D. July 2005; "Surface-based Approaches for Spatial Normalization of the Cerebral Cortex: Geometry-driven Cortical Mappings for Structural and Functional Analysis," Current Position: Assistant Professor, Department of Radiology & Biomedical Imaging, University of California, San Francisco.
13. Krishnakumar Ramamurthi, Ph.D. April 2006; "Cone-Beam Tomography Using C-arm X-ray Projections: Complete Trajectories and Integration of Prior CT Information."; Current Position: Lead Engineer, Castlight Health, San Francisco, CA.
14. Vijay Parthasarathy, Ph.D. April 2006; "Characterization of Harmonic Phase MRI: Theory, Simulations, and Applications"; Current Position: Solutions Architect for Data Driven Radiology Practice, Philips Healthcare, Boston, MA, USA.
15. Khaled Abd-Elmoniem, Ph.D. May 2007; "Fast Measurement of Heart Motion Using MRI: Systems, Sequences, and Algorithms"; Current Position: Staff Scientist, National Institutes of Health.

16. Lotta Ellingsen, Ph.D. December 2007; “Hybrid Deformable Image Registration with Application to Brains, Pelvises, and Statistical Atlases.” Current Position: Assistant Professor, University of Iceland.
17. Bennett Landman, Ph.D. (BME) August 2008; “Diffusion Imaging of the In Vivo cord and cerebellum: Optimization, Representation, and Analysis of Diffusion Weighted MRI,” Current Position: Associate Professor, Electrical Engineering, Vanderbilt University.
18. Xiaofeng Liu (CS) October 2009; “Three-dimensional Muscle Motion Reconstruction Using Tagged MR Images,” Current Position: Software Engineer, Google, New York, NY.
19. Harsh Agarwal, April 2010; Methods for High Resolution Myocardial Motion and Strain Quantification and Robust Coronary MRA in a Relaxed Cardiac MRI Exam,” Current Position: Senior Chief Engineer, Samsung, Bengaluru Area, India.
20. Ying Bai, September 20, 2012; High Resolution Segmentation of Magnetic Resonance Brain Images. Current position: Senior Medical Imaging Scientist, Heart Flow, Inc.
21. Snehashis Roy, December 13, 2012; MR Image Contrast Synthesis for Consistent Segmentation, Ph.D. Current Position: Research Scientist, Henry M. Jackson Foundation, Bethesda MD.
22. John Bogovic, February 2013; Automatic Cerebellar Lobule Segmentation from Magnetic Resonance Images,” Current Position: Bioinformatics Specialist, Howard Hughes Medical Institute.
23. Nathanael Kuo, August 2013; “Image processing of MRI and X-ray images for prostate brachytherapy,” Current position: Senior Professional Staff, The Johns Hopkins University Applied Physics Laboratory.
24. Sahar Soleimanifard, May 2014: “Novel MRI approaches for quantitative assessment of coronary arteries and ventricular function,” Current Position: Medical Doctor candidate, Johns Hopkins School of Medicine.
25. Min Chen, January 2009 – December 2014 “Deformable Image Registration in the Analysis of Multiple Sclerosis” Current Position: Postdoctoral Fellow, University of Pennsylvania.
26. Chuyang Ye, January 2010—December 2014: “Fiber Tracking and Fiber Tract Segmentation Using Diffusion Tensor Imaging.” Current Position: Assistant Professor, Brainnetome Center, Institute of Automation, Chinese Academy of Sciences, Beijing, China.
27. Zhen Yang, January 2010—October 2015: Cerebellar structure segmentation and shape analysis with application to cerebellar ataxia.” Current position: Software Engineer, Google, Inc.
28. Fangxu Xing, January 2010—October 2015: “Three-dimensional tissue motion analysis from tagged magnetic resonance imaging.” Current position: Postdoctoral Fellow, Massachusetts General Hospital.
29. Andrew Lang, January 2011—July 2016: “Methods for automated analysis of macular OCT data.” Current position: Postdoctoral Fellow, Johns Hopkins University
30. Murat Bilgel, August 2011—June 2016: “A multivariate nonlinear mixed effects model for studying preclinical Alzheimer’s disease markers of neuropathology, neurodegeneration, and cognition.” Current position: Postdoctoral Fellow, National Institute on Aging.
31. Amod Jog, January 2012—February 2016: “Image synthesis in magnetic resonance neuroimaging.” Current position: Postdoctoral Fellow, Johns Hopkins University.

### **Current Doctoral Students**

32. Jeff Glaister, September 2013—present; thesis topic: analysis of diffusion weighted images for study of MS and ataxia.

33. Can Zhao, November 2014—present; thesis topic: medical image registration using image synthesis methods.
34. Blake Dewey, September 2015—present; thesis topic: magnetic resonance imaging acquisition and processing multiple sclerosis.
35. Muhan Shao, started September 2016.
36. Yufan He, started September 2016.
37. Shuo Han, started September 2016.

### **Graduated Masters Students with Theses**

1. Michael Guttman, “Contour Estimation in Tagged Cardiac Magnetic Resonance Images”, M. S. in February 1991.
2. Qing Tan, “Optimization of MRI Pulse Sequences for 3D MR Brain Image Segmentation”, M. S. in October 1994.
3. Stephanos Androutsellis-Theotokis, “Experiments in Multiresolution Motion Estimation for Tagged Cardiac MR Images”, M. S. in August 1996.
4. Daphne Yu, “Quantitative Validation of a Cortical Surface Reconstruction Method”, M. S. in January 2000.
5. Kirsten Behnke, “Visualization and Analysis Methods for Brain Sulci”, M.S. August 2003.
6. Ke Li, “Quality assurance using outlier detection for automatic segmentation of cerebellar peduncles,” August 2015.

### **Graduated Masters Students with Project**

7. David Hsu, “Multiparametric SAR Imaging of the Ocean”, M. S. in May 1991.
8. Neil Lofgren, “MOVIE: Displaying the Heart as Separate Chambers”, M. S. in December 1990.
9. Wendy Chiu, “Cortical Curvature Calculation and Display”, M. S. in May 1992.
10. Anthony Stratakos, M.S. September 1991 – May 1992; project title: Simulation of 3-D Motion and Tagged MR Imaging. M. S. in May 1992.
11. Eugene Lin, “CCD Camera Calibration and Programming”, M. S. in June 1994. Co-advised with J. Goutsias.
12. Michael Lopez, “Multidimensional Splines for MR Tag Fitting”, M. S. in May 1995.
13. Edo Waks, “Mechanical Model of the Left Ventricle: Visualization and Parameter Estimation”, M. S. in July 1996.
14. Mark Hachey, thesis topic: “Signal Restoration in Dual-Radionuclide Emission Tomography”; Masters in September 2001.
15. Prasanna Anbazhagan “Automatic Estimation of Mid-sagittal plane and AC-PC Alignment Based on Nonrigid Registration.” Masters in February 2006.
16. Shanell Nero, “Automatic localization of the heart short axis for MR imaging.” Masters in May 2006.
17. Ezgi Ergun, “Analysis of shape changes of the cerebellar lobules in cerebellar ataxia.” June 2015.

### **Current Masters Students with Project or Thesis**

18. Xiaokai Wang, started September 2016.



### **Doctoral Defense Committees (not as first reader or primary advisor)**

1. Mike Pascale, Johns Hopkins University, ECE, 10/10/1996
2. Elli Angelopoulou, Johns Hopkins University, CS, 3/12/1997
3. Madhavi Subbarao, Johns Hopkins University, ECE, 3/20/1998
4. Diego Socolinsky, Johns Hopkins University, CS, 3/16/2000
5. Asela Gunawardana, Johns Hopkins University, ECE, 4/9/2001
6. Ulisses Braga-Neto, Johns Hopkins University, ECE, 10/10/2001
7. Jianhua Yao, Johns Hopkins University, CS, 11/2/2001.
8. Thomas Steck, Johns Hopkins University, ECE, 3/3/2005
9. Ashraf Mohamed, Johns Hopkins University, CS, 7/20/2005
10. Yonggang Deng, Johns Hopkins University, ECE, 12/20/2005
11. Li Pan, Johns Hopkins University, BME, 3/16/2006
12. Utkarsh Sharma, Johns Hopkins University, ECE, 4/3/2006
13. Ahmed Fahmy, Johns Hopkins University, ECE, 6/9/2006
14. Wooram Park, Johns Hopkins University, ME, 1/9/2008
15. Can Ceritoglu, Johns Hopkins University, ECE, 3/31/2008
16. Abdel El-Sharkawy, Johns Hopkins University, ECE, 5/1/2008
17. Ofri Sadowsky, Johns Hopkins University, CS, 9/5/2008
18. Jun Hua, Johns Hopkins University, ECE, 3/18/2009
19. Refaat Gabr, Johns Hopkins University, ECE, 4/6/2009
20. Shashank Sathyanarayana, Johns Hopkins University, ECE, 6/18/09
21. Tamer Basha, Johns Hopkins University, ECE, 10/29/09
22. Alvina Goh, Johns Hopkins University, BME, 03/30/10
23. Gouthami Chintalapani, Johns Hopkins University, CS, 08/03/2010
24. Ahmed El-Harouni, Johns Hopkins University, ECE, 12/20/2010
25. Navid Shiee, Johns Hopkins University, ECE 2/17/2012
26. Mahshid Farzinfar, Nanyang Technological University, 2012
27. Blake Lucas, Johns Hopkins University, CS 6/6/2012
28. Helene Langet, Ecole Centrale de Paris, 3/28/2013
29. Sajendra Nithiananthan, Johns Hopkins University, BME, 5/15/2013
30. Changji Shi, Johns Hopkins University, 3/12/2014
31. Yi Zhang, Johns Hopkins University, ECE, 6/5/2014
32. Ehsan Varianni, Johns Hopkins University, ECE, 4/28/2015

### **Independent Studies and Research Projects**

1. Timothy Eckel: Summer 1989; Volume Rendering of PET data using SunView.
2. Bradley Bolster, Jr.: Spring 1991; Review of Undergraduate Probability.
3. C.-C. (Johnny) Chen: Fall 1991; Image Display Under X Using XBuild and X-Lib.
4. Susan Slawson: Fall 1991: Small Tip-Angle MR Imaging.
5. Darryl Ong: Fall 1992, Spring 1993: Interpolation in MR Brain Imaging.
6. Mike Zelman and Mike Kim: Fall 1992, Spring 1993: Engineering Acoustics.
7. Sandeep Gupta: Winter 1993-94: Wiener Filtering for Dual-Isotope PET.
8. Dzung Pham: Winter 1993-94: 3-D Reconstruction from Brain Atlas Sections.
9. Eugene Lin: Fall 1993: CCD Camera Calibration and Programming.
10. Michael Lopez: Fall 1993: Data Explorer Tools for Image Processing and Display.

11. Edo Waks: Fall 1994, Spring 1995: Calculation and Visualization of Left Ventricular Motion using the Arts/Douglas/Hunter 13-Parameter Model.
12. Christina Vlattas: Summer 1996: Stereo Pairs Using Data Explorer.
13. Maryam Etemad: Summer 1996: User Interface for Conditional PDF Estimation from Multispectral MR Brain Images.
14. Paul DiCamillo: Spring 1997: Charting the Brain Surface: The Creation of Solid Three-Dimensional Cortical Models from MRI Data
15. Ed Hosono: Summer 1997: Generating MPEG Movies Using IBM Visualization Data Explorer.
16. Subir Sahu: Summer 1998: Brain Surface Estimation and Movie Generation and Editing
17. Lotta Maria Ellingsen, Fall 2002: 3D Registration Methods in Medical Imaging
18. Sharon Betz, 2002-2003: Optimized Multicollimator Image Formation in SPECT, Senior Design Project
19. Luu Pham, 2003-2003: Segmentation and Labeling the Cerebellum, Senior Design Project
20. Agatha Monzon, 2003-2004: An Inexpensive Movable Heart Phantom, Senior, Design Project
21. Prasanna Vasudevan (high school student), Summer 2004: Change in the Human Brain Associated with Age, , Intel Science Contest
22. Aaron Maeng (REU student), Summer 2004: Phantom for Evaluating Cone Beam Reconstruction Using a C-arm, REU Project
23. Andrew Liu (undergraduate), 2005: Automatic Labeling of the Cerebellum using Registration
24. Cynthia Byer (REU student), Summer 2005: Automatic alignment of tagged MR images after misalignment caused by breathholding.
25. Shwetadwip Chowdhury (high school student), Summer 2005: Study of Cerebellar Peduncle Degeneration and its Relationship to Forms of Incoordination.
26. Rocío C. Vargas-Pinto (REU student), Summer 2006: Development of a Position Tracking System for the C-arm.
27. Andrew Liu: Summer and Fall, 2006: Senior Design Project on User Interface for Cerebellar Labeling from Magnetic Resonance Images.
28. Neda Jahanshad, Fall 2006: Senior Design Project on Protocol for the Manual Delineation of the Human Cerebellum.
29. Meenal Patel, Summer 2007, REU student: Brain Surface Estimation from Diffusion Tensor Images.
30. Jathin Bandari, Summer 2007, REU student: Visualization of motion fields from HARP MRI.
31. Joynita Sur, Spring 2007, Marketing Project: Diagnosoft Market Survey.
32. Brian Bubnash, Fall 2007-Spring 2008, Senior Design Project: Dewarping X-ray Images from XRIIs
33. Jade Velasquez, Summer 2008, REU Student: Thalamus Parcellation Machine.
34. Nathanael Kuo, Summer 2008, Image Quality Measures.
35. Wade Mayes, Spring 2008, Manual Delineation of the Dentate Nuclei in the Cerebellum.
36. Rachael Nicolleto, January 2009, Truth Models for Web-based Parcellation of the Cerebellum.
37. Duyun Chen, Summer 2009, REU Student: New Tool and Methods for Manual Corrections of 3D Cortical Gyral Labeling.
38. Meredith Thompson, Summer 2009, REU Student: Protocol for the Manual Delineation of the Human Thalamus.
39. Zhen Yang, Fall 2009, ECE Ph.D. Student: Surface alignment methods and software
40. Shubham Debnath, Summer 2010, REU Student: Study of Sulcal Curves on the Outer Cortex of the Human Brain

41. Sudarshan Ramenhalli, 10/01/2009—01/05/2010, ECE Ph.D. Student: Fiber tracking in the tongue muscle using diffusion-weighted imaging data.
42. Fatma ElShahaby, 7/01/2009—12/31/2010, ECE Ph.D. Student: Resolving directions and considering q-space in diffusion weighted MRI
43. Eliana NessAiver, 5/15/2011—8/31/2011, REU Summer Student: Atlas Based Augmentation of Limited FOV Spinal MRI with Applications to Image Guided Spine Surgery.
44. Caleb Fan, 1/1/2011—5/1/2012, BME Undergraduate Student, Senior Design Project: Spinocerebellar Ataxia Processing and Diagnosis Interface (SCA PADI) Design Project.
45. Bhaskar Kishore, 1/1/2011—5/1/2012, CS Ph.D. Student: Optical Coherence Tomography Toolbox.
46. Jennifer Blagg, 6/1/2012—8/31/2012, REU Summer Student: Development of an Image Processing Pipeline for Retinal OCT Images.
47. Emily Swingle, 6/1/2013—8/31/2013, REU Summer Student: Estimation of microscopic macular edema in OCT images of the retina.
48. Yizuo Tian, 9/1/2012—8/31/2014, ECE Masters Student: Improving motion computation and visualization in magnetic resonance imaging of the tongue in speech.
49. Gunnar Sigurdsson, 9/1/2012—8/31/2014, ECE Ph.D. Student: Improving CFARI, a sparse reconstruction approach to estimation of diffusion directions.
50. Sayed Mazdak (Mazy) Abulnaga, 6/1/2015—8/31/2015, REU Summer Student: A Toolbox to Visually Explore Cerebellar Shape Changes in Cerebellar Disease and Dysfunction
51. Sanjukta Nandi, September 2014—April 2016; project topic: fast level set methods in multi-object segmentation for application in cerebellar ataxia and multiple sclerosis.
52. Jordan Ramsey, June 2016—August 2016; REU Summer Student: Database for Image-Based Motion Estimation.

## COURSES TAUGHT AND DEVELOPED

### **Undergraduate Courses Taught**

1. 520.213 Circuits: 1989–93 (Fall); approx. 700 students total.
2. 520.414 Image Processing and Analysis: 1995 (Spring); 15 students.
3. 520.432 Medical Imaging Systems: 1990–95 (Spring); 1995–99 (fall); 2000–05 (spring) approx. 634 students total. Spring 2006 (51 students). Spring 2007, 2008 and Fall 2008, Fall 2009 (approx. 40 students), Fall 2011 (27 students), Fall 2012 (42 students); Fall 2013 (33 students); Fall 2014 (35 students). Fall 2015 (27 students)
4. 520.433 Medical Image Analysis: New Course in Fall 2006 (13 students), Fall 2007 (10 students), Spring 2010 (17 students), Spring 2011 (14 students), Spring 2012 (7 students), Spring 2013 (22 students), Spring 2014 (11 students), Spring 2015 (11 students with grades, 2 audits), Spring 2016 (21 students).

### **Graduate Courses Taught**

5. 520.707 Seminar On Image Processing: 1989 (Fall); 7 students.
6. 520.651 Random Signal Analysis: 1990 (Spring), 1994, 1996–2002 (Fall); approx. 143 students total. Fall 2012 (28 students).
7. 520.608 Image Reconstruction and Restoration: 1992–94, 1997, 2004, 2005; approx. 45 students total; developed course. Spring 2009.

8. 585.605.31 Medical Imaging (in the Part-Time Program): Fall 1994–98; approx. 45 students total; team taught; I. Bankman is course organizer.
9. 585.606.31 Medical Image Processing (in the Part-Time Program): Spring 1996–98; approx. 27 students total; team taught; I. Bankman is course organizer.
10. 520.746 Seminar on Medical Image Analysis. Spring 2002-2005 (approx 31 students total). Spring 2006 (12 students), Spring 2007, 2008, 2009, and 2010. Spring 2011 (7 students), Spring 2012 (5 students); Spring 2013 (7 students); Spring 2014 (5 students); Spring 2015 (5 students).

### **Guest Classroom Lectures**

11. 500.101 Introduction to Engineering, invited by Alan Karr, 1989.
12. 250.300, Intro to Biomedical Research and Careers, invited by Shin Lin, 1994.
13. Non-invasive Cardiovascular Imaging Fellowship Track, invited by Robert Weiss, 1997, 1998.
14. CIS 1: Current Methods in Medical Image Segmentation, September 26, 2013, Invited by Russ Taylor.
15. CIS 1: Medical image synthesis methods and applications, November 5, 2015, Invited by Russ Taylor.

### **Teaching Award**

1. Johns Hopkins University, Certificate of Recognition “For your Outstanding Performance and Contribution to the Student Employment Program,” April 7, 2004. Signed by William R. Brody

### **DEPARTMENT AND UNIVERSITY SERVICE**

1. Radiology Committee on Computer Utilization: June 1991 – December 1991
2. ECE Curriculum Committee: October 1991 – September 1996
3. Attended Whiting School Faculty Retreats: 5/94, 5/95, 5/96 (Co-Leader of Discussion Group)
4. Faculty Advisory Committee on Faculty Responsibilities, Appointed by Dean Giddens, Whiting School of Engineering, January 1996 – May 1996
5. ECE Chair’s Advisory Committee, July 1996 – June 1997
6. ECE Communications Faculty Search Committee Septmeber 1996 – August 1997
7. University Information Systems Planning Committee, January 1997
8. Graduate Admissions Committee, ECE, July 1, 1997 – present.
9. Search Committee for the Dean of the Whiting School of Engineering, August 1997 – May 1998
10. Faculty Participant in the \$17M Whitaker Biomedical Engineering Institute Proposal, funded September 1998.
11. Biomedical Engineering Institute Building Planning Committee, January 1998 – July 2001
12. Promotion and Appointment Ad Hoc Committees: Fall 1998 (member), Spring 1999 (chair), Fall 2000 (member), Spring 2000 (chair), Spring 2002 (member), Spring 2003 (chair). Spring 2005 (member, disbanded), Spring 2006 (chair)
13. ECE Space Committee (chair), July 2001 – June 2007.
14. Certificate of Recognition, presented to Jerry Prince, “for your outstanding performance and contribution fot he student employment program,” April 7, 2004. From William R. Brody.
15. Trip with WSE to talk with Mike Cudahy in Albany, NY, 1 May 2006

16. Interim Member of the Academic Council, Johns Hopkins University, (1-year term), 1 July 2006 – 30 June 2007.
17. Co-chair of CISST/ERC Diversity Committee, 1 June 2002 – 30 May 2008.
18. “Research in Medical Imaging,” Research overview presentation to President Daniels, 1 July 2009, Invited by Dean Jones.
19. Served on Promotion Committee for Harvard School of Medicine, 2010.
20. Elected Member of the Academic Council, Johns Hopkins University, (4-year term), 1 July 2007 – 30 June 2011.
21. Chair of ECE Faculty Search Committee 2011-2012.
22. Chair of ECE Faculty Search Committee 2012-2013.
23. Chair of Whiting School Ad Hoc Committee for a Faculty Appointment, 2012-2013.
24. Member of Committee on the Future of PhD Education, Appointed by the Provost, Johns Hopkins University. Report delivered in August 2013.
25. Chair of ECE Strategic Planning Committee 2013-2014.
26. Member of Search Committee for Dean of Whiting School of Engineering, 2013.
27. Member of Search Committee for Associate Dean for Research, Whiting School of Engineering, 2013-2015.
28. Member of Promotion Committee for Hopkins School of Medicine. 2015-2016.

## PUBLIC RELATIONS ACTIVITIES AND ARTICLES

1. WBAL Radio Interview: September 11, 1990.
2. WJHU Radio Interview: September 26, 1990.
3. “New MRI technique supports medical, engineering research,” The Johns Hopkins University Gazette, vol. 20, no. 3, pg. 3, Sept. 17, 1990.
4. “Scientists use computers to look at heart,” The Johns Hopkins News-Letter, pg. 8, October 19, 1990.
5. “\$2-Million Grant to Johns Hopkins MRI Research,” Photonics Spectra, pg. 52, October 1990.
6. “3D Image of Beating Heart May Render Good Diagnosis,” Engineering Times, vol. 12, no. 10, pg. 12, October 1990.
7. “Hopkins gets \$2 million research grant,” The Daily Record, vol. 205, no. 67, Sept. 19, 1990.
8. “Making 3-D Movies of the Heart,” Science, Research News Article, Vol. 251, pp.28-30, January 4, 1991.
9. “MRI, The Movie,” Breakthroughs in Health and Science, pg. 58, February 1991.
10. The Johns Hopkins Convocation in Washington D. C., 20 minute talk entitled “Engineering in Medicine: MR Imaging of Heart Motion,” September 21, 1991.
11. Presentation for National Youth Science Camp’s visit to the Johns Hopkins University: “Mapping the Brain Using Magnetic Resonance Imaging” and “Noninvasive Analysis of Heart Motion”, July 14, 1992.
12. Engineering Alumni Panel Discussion, March 12 1994.
13. Engineering Family Weekend Presentation, November 1994.
14. Engineering Alumni Presentation, “Faculty ‘life’ in the Whiting School of Engineering,” Whiting School of Engineering, March 11, 1995.
15. Presentation for the IEEE Baltimore Section Chairmen’s Dinner: “Imaging the Heart with Magnetic Resonance”, May 10, 1995.
16. Presentation on the “Role of the Whiting School Department Chairs” at the Meeting of the Whiting School National Advisory Committee, May 10, 1996.
17. Participation in “Beyond the Traditional — Engineering Research and Education in the Information Age”, an electronic poster session hosted by the Whiting School of Engineering, Feb. 21, 1997.

18. Presentation at the annual meeting of the Society of Engineering Alumni (SEA), "Status of Dean's Search", September 27, 1997.
19. "'HARP MRI' takes faster look at heart", by Phil Sneiderman, The JHU Gazette, vol. 29, no. 8, October 18, 1999.
20. "HARP: The Next Phase in Cardiovascular MRI", Medical Device Link, Web Site <http://www.devicelink.com/news/99/10/14490.html>, October 25, 1999.
21. "Faster, Clearer Heart Pictures for Disease Screening and Diagnosis", Whitaker Foundation News, Web Site <http://www.whitaker.org/news/prince.html>, October 27, 1999.
22. "Johns Hopkins tests Harp MRI for real-time cardiac imaging", Medical Imaging News, vol. 8, no. 43, pp. 2-3. 43, 1999.
23. "Harmonic Phase MRI Quickly Analyzes Strain Patterns for Functional View of Heart Stress", Radiology & Imaging Letter, vol. 19, no. 20, p.1, November 15, 1999.
24. "HARPing on the Heart", Technology Review, January/February 2000.
25. "New View on the Heart", ABCNews.com Technology page, <http://abcnews.go.com/sections/tech/MITTechReview/techreview000127.html>, January 28, 2000.
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