

KRISHNA S. NAYAK

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EDUCATION

Ph.D. Electrical Engineering	Stanford University	2001
M.S. Electrical Engineering	Stanford University	1996
B.S. Elec Eng, Comp Sci, Appl Math	Florida State University	1995

RESEARCH AND TEACHING FIELDS

Magnetic Resonance Imaging	Signals & Systems
Medical Physics	Digital Signal Processing

PRIMARY POSITIONS

Professor, Electrical Engineering, University of Southern California (joint appointments in Biomedical Engineering, Radiology, and Medicine)	2014-
Associate Professor, Electrical Engineering, University of Southern California	2009-14
Assistant Professor, Electrical Engineering, University of Southern California	2003-09
Lecturer & Research Associate, Electrical Engineering, Stanford University	2001-03

VISITING POSITIONS

Sabbatical, Laboratory for Cardiac Energetics, NIH/NHLBI Intramural Division	2010-11
Research Professor, Department of Medicine, Loma Linda University	2008-13

CONSULTING POSITIONS

Consultant, Lithera, Inc.	2013
Consultant, California Heart Centers Group	2009-11
Consultant, Phantoms by Design, Inc.	2002-09
Consultant, NetVMG, Inc.	2001-03

HONORS and AWARDS

USC Community Engagement Award	2014
USC Center for Excellence in Teaching, Faculty Fellow	2013-14
NAE Frontiers of Engineering Education, Participant	2011
GE Healthcare Magnetic Resonance Thought Leader Award	2009
USC Mellon Mentoring Award, Faculty Mentoring of Graduate Students	2008
Elected IEEE Senior Member	2008
USC Viterbi School of Engineering Outstanding Junior Faculty Research Award	2007
Fannie and John Hertz Foundation Doctoral Thesis Prize	2001
ISMRM Student Stipend Recipient	1997-99
Fannie and John Hertz Foundation Graduate Fellowship	1995-00
Tau Beta Pi Centennial Fellowship #11	1995
Phi Kappa Phi Graduate Fellowship	1995

MEMBERSHIP

American Society for Engineering Education	2011-
American Association for the Advancement of Science	2008-
American Heart Association	2003-
Institute of Electrical and Electronics Engineers (Senior Member 2008-present)	2001-
Society for Cardiovascular Magnetic Resonance	2000-
International Society for Magnetic Resonance in Medicine	1996-

RESEARCH

FUNDING

- ▶ **Co-Investigator**, NIH/NIDDK, “Optimizing Tissue Iron Quantification at 3 Tesla,” R01-DK097115. PI: John Wood. Sept 2013 – Aug 2017. Total: \$1.6M. KN’s portion: \$140k.
- ▶ **Principal Investigator**, American Heart Association, Grant-in-Aid, “Myocardial ASL Perfusion Imaging with Improved Coverage and Sensitivity,” 13GRNT13850012, January 2013 – December 2014. Total: \$140k.
- ▶ **Principal Investigator**, Wallace H. Coulter Foundation, Phase-II Coulter Translational Research Award, “Myocardial Perfusion Imaging without Contrast Agents,” September 2012 – August 2014. Total: \$320k.
- ▶ **Co-Investigator**, NIH/NHLBI, “Model-based Phenotyping of OSAS in Pediatric Obesity using Dynamic MR Imaging,” R01-HL105201. PI: Michael Khoo. Sept 2010 – Aug 2014. Total: \$3.4M. KN’s portion: \$1.2M.
- ▶ **Co-Investigator**, NIH/NIDCD, “Dynamics of Vocal Tract Shaping,” R01-DC007142, PI: Shrikanth Narayanan. May 2005 – April 2010. Total: \$2.1M. KN’s portion: \$400k. May 2010 – April 2015. Total: \$2.0M. KN’s portion: \$380k.
- ▶ **Co-Investigator**, NIH/NIBIB, “Novel ICA Based Multi-fiber Streamline Tractography Approach,” R21-EB013456. PI: Meng Law. January 2012 – December 2013. Total: \$440k. KN’s portion: \$16k.
- ▶ **Co-Investigator**, NIH/NIDDK, “ β -cell Preservation through Fat Mitigation,” U01-DK094430. PI(s): Tom Buchanan, Anny Xiang. September 2011 – June 2016. Total: \$3.8M. KN’s portion: \$20k.
- ▶ **Principal Investigator**, Wallace H. Coulter Foundation, Phase-I Coulter Translational Research Award, “Myocardial Perfusion Imaging without Contrast Agents,” September 2010 – August 2012. Total: \$180k.
- ▶ **Co-Investigator**, NIH/NIDDK, “Risk Factors for Type-II Diabetes in Hispanic Adolescents,” R01-DK059211. PI: Michael Goran. Oct 2009 – Sept 2014. Total: \$3.2M. KN’s portion: \$60k.
- ▶ **Principal Investigator**, NIH/NIDDK, “Rapid MRI Measures of Absolute Fat Mass in Adipose Tissue and Organs,” R21-DK081173. February 2009 – December 2012. (no cost extension). Total: \$450k.
- ▶ **Co-Principal Investigator**, GE Healthcare, “Cardiovascular Magnetic Resonance at 3 Tesla,” PI(s): Gerald Pohost, Krishna Nayak. July 2008 – December 2011. Total: \$320k. KN’s portion: \$240k.
- ▶ **Principal Investigator**, NIH/NHLBI, “Superior Cardiac MRI using Wideband SSFP at 3 Tesla,” R21-HL079987. February 2006 – November 2008. Total: \$430k.
- ▶ **Principal Investigator**, American Heart Association, Scientist Development Grant, “Coronary Magnetic Resonance Angiography at 3 Tesla,” #0435249N, \$260,000. July 2004 – June 2008. Total: \$320k.
- ▶ **Subcontract PI**, NIH/NHLBI, “Comprehensive Assessment of Valvular Function with MRI,” R01-HL074332. PI: John Pauly (Stanford). January 2004 – January 2008. Total: \$350k.

Total amounts include F&A and indirect costs, and are rounded to two significant digits. If funding is shared by multiple investigators, my portion is listed separately.

Small / Pilot Grants

- ▶ **Co-Investigator**, Clinical and Translational Science Institute, Pilot Grant, “Drug-Induced Sleep Endoscopy and Magnetic Resonance Imaging in Obstructive Sleep Apnea,” July 2014 – June 2015. \$49,000.
- ▶ **Principal Investigator**, Clinical and Translational Science Institute, Pilot Grant, “Improved DCE Neuro-MRI using Constrained Reconstruction,” July 2013 – June 2014. \$38,282.
- ▶ **Principal Investigator**, Clinical and Translational Science Institute, Pilot Grant, “MRI Assessment of 3D Blood Flow Dynamics in Patients with Carotid Atherosclerosis,” July 2008 – June 2009. \$41,556.
- ▶ **Subcontract PI**, Respironics Foundation, “Development of Non-invasive Airway Compliance Assessment using Real-Time MRI,” PI: Ian Colrain (SRI International), January 2008 – July 2008. \$73,150.
- ▶ **Principal Investigator**, Center for Transdisciplinary Research on Energetics and Cancer, Pilot Grant, “Rapid and Non-invasive Quantitation of Abdominal Fat Distribution using Magnetic Resonance Imaging,” September 2007 – August 2008. \$35,000.
- ▶ **Co-Principal Investigator**, James H. Zumberge Research and Innovation Fund, Interdisciplinary Research Grant, “Assessment of Myocardial Perfusion by Cardiac MRI,” with Co-PI: Gerald Pohost, July 2005 – June 2006. \$50,000.
- ▶ **Subcontract PI**, Respironics Foundation, “Non-invasive Airway Compliance Assessment using Real-Time MRI,” PI: Ian Colrain (SRI International), October 2004 – March 2006. \$86,673.
- ▶ **Principal Investigator**, James H. Zumberge Research and Innovation Fund, Individual Research Grant, “Cardiac Magnetic Resonance Imaging at 3 Tesla,” July 2004 – June 2005. \$25,000.

Funding from a previous institution (Stanford):

- ▶ **Investigator**, NIH/NHLBI, “Noninvasive Coronary Artery Imaging using MR,” PI: Dwight Nishimura (Stanford), R01-HL39297. July 1992 – August 2007.
- ▶ **Investigator**, NIH/NHLBI, “Integrated Myocardial Ischemia Assessment with MRI,” PI: John Pauly (Stanford), R01-HL67161. January 2003 – December 2007.
- ▶ **Investigator**, NIH/NIBIB, “MR Guided Vascular Interventions,” PI: John Pauly (Stanford), R01-EB002992. September 2003 – July 2007.
- ▶ **Investigator**, NIH/NCI, “High-Speed MRI for Tumor Interventions,” PI: Al Macovski (Stanford), R01-CA50948. July 2000 – June 2003.
- ▶ **Investigator**, California TRDRP, “Comprehensive Evaluation of the Ischemic Leg,” PI: Dwight Nishimura (Stanford), 9RT-0024. July 2000 – June 2003.
- ▶ **Investigator**, NIH/NICRR, “Center for Advanced Magnetic Resonance Technology at Stanford,” PI: Gary Glover (Stanford), R01-HL39297. January 2001 – December 2006.
- ▶ **Investigator**, NIH/NIBIB, “Development of a Prepolarized MRI Extremity Scanner,” PI: Al Macovski (Stanford), R01-EB000346. September 2001 – August 2005.
- ▶ **Investigator**, NIH, “Development of Improved MRI Techniques for Cartilage Injury and Repair,” PI: Al Macovski (Stanford), R01-AR46904. September 1999 – August 2003.

PUBLICATIONS

JOURNAL PAPERS (refereed)

1. **KS Nayak** and RJ Fleck Jr. "Seeing Sleep: Dynamic Imaging of Upper Airway Collapse and Collapsibility in Children." *IEEE Pulse*. 5(5):40–44. September 2014.
2. SS Narayanan, A Toutios, V Ramanarayanan, A Lammert, J Kim, S Lee, **KS Nayak**, Y-C Kim, Y Zhu, L Goldstein, D Byrd, E Bresch, P Ghosh, A Katsamanis, and M Proctor. "Real-time magnetic resonance imaging and electromagnetic articulography database for speech production research." *Journal of the Acoustical Society of America*. 136(3): 1307-1311. September 2014.
3. Y-C Kim, RM Lebel, Z Wu, SL Davidson Ward, MCK Khoo, **KS Nayak**. "Real-time 3D MRI of the Pharyngeal Airway in Sleep Apnea." *Magnetic Resonance in Medicine*. 71(4): 1501-1510. April 2014.
4. Z Wu, Y-C Kim, MCK Khoo, **KS Nayak**. "Evaluation of an Independent Linear Model for Acoustic Noise on a Conventional MRI Scanner and Implications for Acoustic Noise Reduction." *Magnetic Resonance in Medicine*. 71(4):1613-1620. April 2014.
5. RM Lebel, J Jones, JC Ferre, M Law, **KS Nayak**. "Highly accelerated dynamic contrast enhanced imaging." *Magnetic Resonance in Medicine*. 71(2):635-644. February 2014.
6. HP Do, TR Jao, **KS Nayak**. "Myocardial Arterial Spin Labeling Perfusion Imaging with Improved Sensitivity." *Journal of Cardiovascular Magnetic Resonance*. 16:15. January 2014.
7. AZ Lau, AP Chen, Y Gu, M Ladouceur-Wodzak, **KS Nayak**, CH Cunningham. "Noninvasive identification and assessment of functional brown adipose tissue in rodents using hyperpolarized ^{13}C imaging." *International Journal of Obesity*. 38(1):126-131. January 2014.
8. Y Zu, SS Narayanan, Y-C Kim, **KS Nayak**, C Bronson-Lowe, B Villegas, M Ouyoung, UK Sinha. "Evaluation of swallow function post tongue cancer treatment using real-time MRI: A pilot study." *Otolaryngology -- Head and Neck Surgery*. 139(12):1312-1319. December 2013.
9. SD Sharma, HH Hu, **KS Nayak**. "Accelerated T_2^* -Compensated Fat Fraction Quantification Using a Joint Parallel Imaging and Compressed Sensing Framework." *Journal of Magnetic Resonance Imaging*. 38(5):1267-1275. November 2013.
10. SD Sharma, CL Fong, BS Tzung, M Law, **KS Nayak**. "Clinical Image Quality Assessment of Accelerated Magnetic Resonance Neuroimaging using Compressed Sensing." *Investigative Radiology*. 48(9):638-645, September 2013.
11. Y Zhu, MI Proctor, YC Kim, SS Narayanan, **KS Nayak**. "Dynamic 3D Visualization of Vocal Tract Shaping during Speech," *IEEE Transactions on Medical Imaging*. 32(5):838-848. May 2013.
12. CM Toledo-Corral, TL Alderete, HH Hu, **KS Nayak**, S Esplana, T Liu, MI Goran, MJ Weigensberg. "Ectopic Fat Deposition in Pre-diabetic Overweight and Obese Minority Adolescents." *Journal of Clinical Endocrinology & Metabolism*, 98(3):1115-1121, March 2013.
13. T Shin, **KS Nayak**, JM Santos, DG Nishimura, BS Hu, MV McConnell. "Three-dimensional first-pass myocardial perfusion MRI using a stack-of-spirals acquisition." *Magnetic Resonance in Medicine*. 69(3):839-844. March 2013.
14. MI Proctor, E Bresch, D Byrd, **KS Nayak**, SS Narayanan. "Paralinguistic Mechanisms of Production in Human Beatboxing: A Real-Time Magnetic Resonance Imaging Study." *J. Acoust. Soc. Am.* 133(2):1043-1054, February 2013.

15. SD Sharma, HH Hu, **KS Nayak**, "Chemical Shift Encoded Water-Fat Separation Using Parallel Imaging and Compressed Sensing." *Magnetic Resonance in Medicine* 69(2): 456-466, February 2013.
16. AA Joshi, HH Hu, MI Goran, RM Leahy, **KS Nayak**. "Automatic Intra-subject Registration-based Segmentation of Abdominal Fat from 3D Water-Fat MRI." *Journal of Magnetic Resonance Imaging* 37:423-430, February 2013.
17. TB Smith, **KS Nayak**. "Automatic off-resonance correction in spiral imaging with piecewise linear autofocus." *Magnetic Resonance in Medicine*. 69(1):82-90. January 2013.
18. GS Danagoulian, L Qin, **KS Nayak**, RR Colen, S Mukundan Jr., MB Harris, FA Jolesz, A Shankaranarayanan, WA Copen, EJ Schmidt. "Comparison of wideband steady-state free precession and T2-weighted fast spin echo in spine disorder assessment at 1.5 and 3T." *Magnetic Resonance in Medicine* 68(5):1527-1535, November 2012.
19. MK Makhijani, N Balu, K Yamada, C Yuan, **KS Nayak**. "Accelerated 3D MERGE Carotid Imaging using Compressed Sensing with a Hidden Markov Tree Model." *Journal of Magnetic Resonance Imaging* 36(5):1194-1202, November 2012.
20. TB Smith, **KS Nayak**. "Reduced Field of View MRI with Rapid, B₁-Robust Outer Volume Suppression," *Magnetic Resonance in Medicine* 67(5):1316-1323, May 2012.
21. Y-C Kim, MI Proctor, SS Narayanan, **KS Nayak**. "Improved imaging of lingual articulation using real-time multislice MRI." *Journal of Magnetic Resonance Imaging* 35(4):943-948. April 2012.
22. SD Sharma, HH Hu, **KS Nayak**. "Accelerated Water-Fat Imaging Using Restricted Subspace Field Map Estimation and Compressed Sensing," *Magnetic Resonance in Medicine* 67(3):650-659, March 2012.
23. Z Zun, P Varadarajan, RG Pai, EC Wong, **KS Nayak**. "Arterial Spin Labeled MRI Detects Clinically Relevant Increases in Myocardial Blood Flow with Vasodilation," *JACC Cardiovascular Imaging* 4(12):1253-1261, December 2011.
24. HH Hu, TR Nagy, MI Goran, **KS Nayak**. Quantification of absolute fat mass by magnetic resonance imaging: a validation study against chemical analysis. *International Journal of Body Composition Research* 9(3):111-122, November 2011.
25. G Hamilton, DL Smith, M Bydder, **KS Nayak**, HH Hu. "Magnetic resonance properties of brown and white adipose tissues," *Journal of Magnetic Resonance Imaging* 34(2):468-473, August 2011.
26. Y-C Kim, CE Hayes, S Narayanan, **KS Nayak**. "A novel 16-channel receive coil array for accelerated upper airway MRI at 3 Tesla," *Magnetic Resonance in Medicine* 65(6):1711–1717, June 2011.
27. HH Hu, **KS Nayak**, MI Goran. "Assessment of abdominal adipose tissue and organ fat content by magnetic resonance imaging," *Obesity Reviews* 12:e504–e515, May 2011.
28. Y-C Kim, SS Narayanan, **KS Nayak**. "Flexible retrospective selection of temporal resolution in real-time speech MRI using a golden-ratio spiral view order," *Magnetic Resonance in Medicine* 65:1365–1371, May 2011.
29. T Rhee, JP Lewis, U Neumann, **KS Nayak**. Scan-based volume animation driven by locally adaptive articulated registrations. *IEEE Transactions on Visualization and Graphics*, 17(3):368-379, March 2011.
30. K-A Le, EE Ventura, JQ Fisher, JA Davis, MJ Weigensberg, M Punyanita, HH Hu, **KS Nayak**, MI Goran. "Ethnic differences in pancreatic fat accumulation and its relationship with other fat depots and inflammatory markers," *Diabetes Care* 34:485-490, February 2011.

31. HH Hu, SA Chung, **KS Nayak**, HA Jackson, V Gilsanz. "Differential CT attenuation of metabolically active and inactive adipose tissues: preliminary findings," *Journal of Computer Assisted Tomography* 35(1):65-71, January-February 2011.
32. TB Smith, **KS Nayak**, "An overview of MRI artifacts and correction strategies," *Imaging in Medicine*. 2(4):445-457. August 2010.
33. HL Lee, A Shankaranarayanan, GM Pohost, **KS Nayak**, "Improved 3 Tesla cardiac cine imaging using wideband SSFP," *Magn. Reson. Med.* 63(6):1716-1722, June 2010.
34. JLA Carvalho, JF Nielsen, **KS Nayak**. "Feasibility of in vivo measurement of carotid wall shear rate using spiral Fourier velocity encoded MRI," *Magn. Reson. Med.* 63(6): 1537-1547, June 2010.
35. HH Hu, DL Smith, **KS Nayak**, MI Goran, TR Nagy, "Identification of Brown Adipose Tissue in Mice with Fat-Water IDEAL-MRI," *J. Magn. Reson. Imag.* 31(5):1195:1202. April 2010.
36. HL Lee, A Shankaranarayanan, GM Pohost, **KS Nayak**, "Three-dimensional coronary MR angiography with sub-millimeter resolution using wideband SSFP at 3 Tesla," *J. Magn. Reson. Imag.* 31(5):1224-1229. April 2010.
37. KH Sung, HL Lee, HH Hu, **KS Nayak**, "Prediction of Myocardial Signal during CINE Balanced SSFP Imaging," *Magn. Reson. Mater. Phy. (MAGMA)* 23(2):85-91. April 2010.
38. T Shin, GM Pohost, **KS Nayak**, "Systolic 3D first-pass myocardial perfusion MRI: comparison with diastolic imaging in healthy volunteers," *Magn. Reson. Med.* 63(4): 858-864. April 2010.
39. HH Hu, HW Kim, **KS Nayak**, MI Goran, "Comparison of 3D Fat-Water MRI and Single-Voxel MRS in the Assessment of Hepatic and Pancreatic Fat Fraction," *Obesity* 18(4): 841-847. Apr 2010.
40. TB Smith, Z Zun, EC Wong, **KS Nayak**. "Design and use of Variable Flip Angle Schedules in Transient Balanced SSFP Subtractive Imaging," *Magn. Reson. Med.* 63(2):537-542. February 2010.
41. MK Makhijani, HH Hu, GM Pohost, **KS Nayak**, "Improved Blood Suppression in 3D FSE Vessel Wall Imaging using a combination of Double Inversion Recovery and Diffusion Sensitizing Gradient Preparations," *J. Magn. Reson. Imag.* 31(2):398-405. February 2010.
42. HH Hu and **KS Nayak**. "Change in the proton T1 of Fat and Water in Mixture," *Magn. Reson. Med.* 63(2):494-501. February 2010.
43. Z Zun, EC Wong, **KS Nayak**. "Assessment of myocardial blood flow in humans using arterial spin labeling: feasibility and SNR requirements," *Magn. Reson. Med.* 62(4): 975-83. October 2009.
44. YC Kim, S Narayanan, **KS Nayak**. "Accelerated 3D upper airway MRI using compressed sensing," *Magn. Reson. Med.*, 61(6):1434-40. June 2009.
45. JF Nielsen and **KS Nayak**. "Reference-less phase velocity mapping using balanced SSFP," *Magn. Reson. Med.*, 61(5):1096-1102. May 2009.
46. JF Nielsen and **KS Nayak**. "Interleaved balanced SSFP imaging: artifact reduction using gradient waveform grouping," *J. Magn. Reson. Imag.* 29(3):745-750. March 2009.
47. H Jung, KH Sung, **KS Nayak**, EY Kim, JC Ye. "k-t FOCUSS: a general compressed sensing framework for high-resolution dynamic MRI," *Magn. Reson. Med.*, 61(1):103-116. January 2009.
48. T Shin, HH Hu, GM Pohost, **KS Nayak**. "Three dimensional first-pass myocardial perfusion imaging at 3T: feasibility study," *J. Cardiovasc. Magn. Reson.* 10:57. December 2008.
49. HH Hu and **KS Nayak**. "Quantification of Absolute Fat Mass Using an Adipose Tissue Reference Signal Model," *J. Magn. Reson. Imag.*, 28(6):1483-1491. December 2008.
50. HL Lee and **KS Nayak**. "Stabilization of alternating TR steady state free precession sequences," *J. Magn. Reson.* 195:211-218. December 2008.

51. KH Sung and **KS Nayak**. "Design and use of tailored hard-pulse trains for uniform saturation of myocardium at 3 Tesla," *Magn. Reson. Med.*, 60(4):997-1002. October 2008.
52. CY Liu, P Varadarajan, GM Pohost, **KS Nayak**. "Real-time color flow MRI at 3 Tesla using variable density spiral phase contrast." *Magn. Reson. Imaging*, 26(5):661-666. May 2008.
53. E Bresch, YC Kim, **KS Nayak**, D Byrd, S Narayanan, "Seeing speech: capturing vocal tract shaping using real-time magnetic resonance imaging," *IEEE Signal Proc. Mag.*, 25(3): 123-132. May 2008.
54. BL Gerber, SV Raman, **KS Nayak**, FH Epstein, P Ferreira, L Axel, DL Kraitchman. "Cardiac first-pass perfusion imaging - history, theory, and current state-of-the-art." *J. Cardio. Magn. Reson.*, 10:18. April 28th, 2008.
55. KH Sung and **KS Nayak**. "B1+ compensation in 3T cardiac imaging using short 2DRF pulses," *Magn. Reson. Med.*, 59(3):441-446. March 2008.
56. KH Sung and **KS Nayak**. "Measurement and characterization of RF non-uniformity over the heart at 3T using body coil transmission," *J. Magn. Reson. Imag.*, 27(3):643-648. March 2008.
57. YC Kim, JF Nielsen, **KS Nayak**. "Automatic correction of EPI ghosting artifacts in real-time interactive cardiac MRI using sensitivity encoding," *J. Magn. Reson. Imag.*, 27(1):239-245. January 2008.
58. JF Nielsen and **KS Nayak**. "SSFP and GRE phase contrast imaging using a three-echo readout," *Magn. Reson. Med.*, 58(6):1288-1293. December 2007.
59. **KS Nayak**, HL Lee, BA Hargreaves, BS Hu. "Wideband SSFP: alternating repetition time balanced steady state free precession imaging with increased band spacing," *Magn. Reson. Med.*, 58(5):931-938. November 2007.
60. T Shin, JF Nielsen, **KS Nayak**. "Accelerating dynamic spiral MRI by algebraic reconstruction from under-sampled k-t space," *IEEE T. Med. Imaging*, 26(7):917-924. July 2007. USC-EE Dept. Best Student Paper "Honorable Mention" 2008.
61. JLA Carvalho and **KS Nayak**. "Rapid quantitation of cardiovascular flow using slice-selective Fourier velocity encoding with spiral readouts," *Magn. Reson. Med.*, 57(4): 639-646. April 2007. USC-EE Dept. Best Student Paper Award 2007.
62. E de la Pena, PK Nguyen, **KS Nayak**, PC Yang, DN Rosenthal, BS Hu, JM Pauly, MV McConnell. "Real-time color-flow CMR in adults with congenital heart disease," *J. Cardio. Magn. Reson.*, 8(6):809-815. December 2006.
63. E Bresch, J Nielsen, **KS Nayak**, S Narayanan. "Synchronized and noise-robust audio recordings during real-time magnetic resonance imaging scans," *J. Acoust. Soc. Am.*, 120(4):1791-1794, October 2006.
64. JB Park, BS Hu, S Conolly, **KS Nayak**, DG Nishimura. "Rapid cardiac-output measurement with ungated spiral phase contrast," *Magn. Reson. Med.*, 56(2):432-438, August 2006.
65. PEZ Larson, PT Gurney, **KS Nayak**, GE Gold, JM Pauly, DG Nishimura. "Designing long-T2 suppression pulses for ultra-short echo time (UTE) imaging," *Magn. Reson. Med.*, 56(1):94-103, July 2006.
66. CH Cunningham, JM Pauly, **KS Nayak**. "Saturated double-angle method for rapid B1+ mapping," *Magn. Reson. Med.*, 55(6):1326-1333, June 2006.
67. M Terashima, MS Hyon, E de la Pena, PC Yang, BS Hu, **KS Nayak**, JM Pauly, and MV McConnell. "High-resolution real-time spiral MRI for guiding vascular interventions in a rabbit model at 1.5T," *J. Magn. Reson. Imag.*, 22(5):687-690, November 2005.
68. JC DiCarlo, BA Hargreaves, **KS Nayak**, BS Hu, JM Pauly, DG Nishimura. "Variable-density one-shot Fourier velocity encoding," *Magn. Reson. Med.*, 54(3):645-655, September 2005.

69. G Narayan, **KS Nayak**, JM Pauly, BS Hu. "Single-breath hold, four-dimensional, quantitative assessment of LV and RV function using triggered, real-time, steady-state free precession MRI in heart failure patients," *J. Magn. Reson. Imag.*, 22(1):59-66, July 2005.
70. **KS Nayak**, BA Hargreaves, BS Hu, DG Nishimura, JM Pauly, and CH Meyer. "Spiral balanced SSFP cardiac imaging," *Magn. Reson. Med.*, 53(6):1468-1473, June 2005.
71. JB Park, JM Santos, BA Hargreaves, **KS Nayak**, G Sommer, BS Hu, DG Nishimura. "Rapid measurement of renal artery blood flow with ungated spiral phase contrast MRI," *J. Magn. Reson. Imag.*, 21(5):590-595, May 2005.
72. **KS Nayak** and BS Hu, "The future of real-time cardiac magnetic resonance imaging," *Current Cardiology Reports*, 7:45-51, January 2005.
73. **KS Nayak**, CH Cunningham, JM Santos, and JM Pauly. "Real-time cardiac imaging at 3 Tesla," *Magn. Reson. Med.*, 51(4):655-660, April 2004.
74. S Narayanan, **KS Nayak**, S Lee, A Sethy, and D Byrd, "An approach to real-time magnetic resonance imaging for speech production," *J. Acoust. Soc. Am.*, 115(5):1771-1776, April 2004.
75. DJ Asakawa, **KS Nayak**, SS Blemker, SL Delp, JM Pauly, DG Nishimura, and GE Gold, "Real-time imaging of skeletal muscle velocity," *J. Magn. Reson. Imag.*, 18:734-739, December 2003.
76. **KS Nayak**, D McKernan, and J Johnson, "Measurements of forward path diversity between Internet service providers," *J. Internet Tech.*, 4:285-289, October 2003.
77. **KS Nayak**, BS Hu, and DG Nishimura, "Rapid quantitation of high-speed flow jets," *Magn. Reson. Med.* 50:366-372, August 2003.
78. BA Hargreaves, SS Vasanaawala, **KS Nayak**, BS Hu, and DG Nishimura, "Fat suppressed steady-state free precession imaging using phase detection," *Magn. Reson. Med.* 50:210-213, July 2003.
79. **KS Nayak** and BS Hu, "Triggered real-time MRI and cardiac applications," *Magn. Reson. Med.*, 49:188-192, January 2003.
80. JR Forder, **KS Nayak**, and GM Pohost, "Faster speed, better spatial resolution lead 3T benefits," *Diagnostic Imaging*, 24(13):65-73, December 2002.
81. PA Rivas, **KS Nayak**, GC Scott, MV McConnell, AB Kerr, DG Nishimura, JM Pauly, and BS Hu, "In-vivo real-time intravascular MRI," *J. Cardiovasc. Magn. Reson.*, 4(2):223-232, June 2002.
82. **KS Nayak**, JM Pauly, PC Yang, BS Hu, CH Meyer, DG Nishimura, "Real-time interactive coronary MRA", *Magn. Reson. Med.*, 46:430-435, Sept. 2001.
83. **KS Nayak**, PA Rivas, JM Pauly, GC Scott, AB Kerr, BS Hu, and DG Nishimura, "Real-time black-blood MRI using spatial presaturation," *J. Magn. Reson. Imag.*, 13:807-812, May 2001.
84. **KS Nayak**, C-M Tsai, CH Meyer, DG Nishimura, "Efficient off-resonance correction for spiral imaging," *Magn. Reson. Med.*, 45:521-524, March 2001.
85. **KS Nayak**, JM Pauly, DG Nishimura, and BS Hu, "Rapid ventricular assessment using real-time interactive multi-slice MRI," *Magn. Reson. Med.*, 45:371-375, March 2001.
86. **KS Nayak**, JM Pauly, AB Kerr, BS Hu, and DG Nishimura, "Real-time color flow MRI," *Magn. Reson. Med.*, 43:251-258, Feb. 2000.
87. **KS Nayak** and DG Nishimura, "Automatic field map generation and off-resonance correction for projection reconstruction imaging," *Magn. Reson. Med.*, 43:151-154, Jan. 2000.

FULL-LENGTH CONFERENCE PAPERS (refereed)

1. A Reyes, **KS Nayak**, G Loeb, F Valero-Cuevas. "Structural MRI Identifies Precise Location of Intramuscular Electrode Recording Site Based on Presence of Micro-Hematoma." Proc. IEEE EMBS Conference on Neural Engineering, San Diego, November 2013.
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12. **KS Nayak** and BA Hargreaves, “Steady-State Free-Precession MRI with Increased Signal Bandwidth,” U.S. Patent #7,332,908. issued Feb. 2008. Licensed to GE, Siemens, and Philips.
13. **KS Nayak** “Ultra-short T2 Imaging Pulse Sequence,” 2003, software licensed to GE.
14. KI Iourcha, **KS Nayak**, Z Hong, “System and Method for Fixed-rate Block-based Image Compression with Inferred Pixel Values,” U.S. Patent #5,956,431, issued Sept. 1999. Continuation: “Fixed-rate Block-based Image Compression with Inferred Pixel Values,” U.S. Patent #6,658,146, issued Dec. 2003. Continuation: “Fixed-rate Block-based Image Compression with Inferred Pixel Values,” U.S. Patent #6,683,978, issued Jan. 2004. Continuation: “Fixed-rate Block-based Image Compression with Inferred Pixel Values,” U.S. Patent #6,775,417, issued Aug. 2004. Continuation: “Fixed-rate Block-based Image Compression,” U.S. Patent #7,039,244, issued May 2006. Continuation: “Image Processing System,” U.S. Patent #7,043,087, issued May 2006. Continuation: “Imaging CODEC Engine,” U.S. Patent #7,801,363, issued Sept. 2010.

INVITED TALKS

INVITED CONFERENCE TALKS

1. Real-Time Imaging and Compressed Sensing, Gordon Research Conference on In-Vivo NMR, Proctor Academy, Andover, NH, July 2014.
2. Imaging Challenges at 3T and Above, ISMRM 2014, Course: Cardiovascular MRI at 3T and Beyond, Milano, Italy, May 2014.
3. Real-Time MRI of Speech Production, Speech MRI Summit, Los Angeles, CA, February 2014.
4. How to Quantify Blood Flow, SCMR 16th Scientific Sessions, Physician Pre-conference Course, January 2014.
5. What is Compressed Sensing and How Can We Use It? ASFNR-ISMRM Session on Ultrafast MR Imaging, ASNR 51st Annual Meeting, San Diego, CA, May 2013.
6. New CMR Sequences and Techniques. ISMRM 2013 Weekend Course, Recent Innovations in Cardiovascular MR, Recent Developments in Hardware and Software Relevant to CMR. Salt Lake City, April 2013.
7. Towards myocardial perfusion imaging using arterial spin labeling at high fields. SCMR-ISMRM Joint Workshop: New Horizons in High-Field Cardiovascular MR: Promise and Progress. San Francisco, CA, January 2013.
8. New CMR Sequences and Techniques. ISMRM 2012 Weekend Course, Recent Advances in Cardiovascular MR, Recent Developments in Hardware and Software. Melbourne, Australia, May 2012.
9. Non-contrast perfusion methods: Ready for prime time? SCMR 14th Scientific Sessions, Orlando, FL, February 2012.
10. CMR Perfusion using Arterial Spin Labeling. GE Luchtime Symposium at the SCMR 14th Scientific Sessions, Nice, France, February 2011.
11. Novel Myocardial Perfusion Techniques: Arterial Spin Labeling. SCMR 14th Scientific Sessions, Basic Science Pre-conference Course. Nice, France, February 2011.
12. Advanced Pulse Sequences for 3 Tesla CMR. ISMRM 18th Scientific Sessions, Sunrise Course: Cardiovascular MR Imaging, Stockholm, May 2010.
13. Tools for Mapping and Quantitative Imaging. ISMRM 18th Scientific Sessions, Educational Course: Imaging Strategies, Stockholm, May 2010.
14. Update on Myocardial Perfusion using Arterial Spin Labeling. SCMR 13th Scientific Sessions, Phoenix, AZ, January 2010.
15. Technical Challenges and Solutions for CMR at 3 Tesla. SCMR High-Field and Basic Science Pre-conference workshop. Phoenix, AZ, January 2010.
16. Real-Time Measurement of Cardiac Function and Flow. ISMRM Workshop on Cardiovascular Function, Flow, and Tissue Mechanics. Sintra, Portugal, September 2009.
17. Quantitative MRI of Abdominal Fat: Recent Developments. NCI Transdisciplinary Research on Energetics and Cancer (TREC) Scientific Meeting. Cleveland, OH, May 2009.
18. Myocardial Perfusion using Arterial Spin Labeling. SCMR 12th Scientific Sessions, Orlando, FL, January 2009.
19. Real-Time Imaging at 3T. SCMR 11th Scientific Sessions, Los Angeles, CA, February 2008.
20. Handling RF Variation at 3T. Workshop on High-Field Cardiovascular MR: An Update, Los Angeles, CA, January 2008.
21. Real-Time Imaging at 3T. ISMRM 15th Scientific Sessions, Clinical Categorical Course: Cardiovascular Imaging at High Field, Berlin, May 2007.

22. Strategies for collecting temporally-resolved physiological data. ISMRM 15th Scientific Sessions, Educational Course: MR Physics for Physicists, Berlin, May 2007.
23. Spiral and Real-Time Imaging. SCMR 10th Scientific Sessions, Rome, February 2007.
24. The Current Cutting-Edge in Rapid CMR Imaging, SCMR 10th Scientific Sessions, Rome, February 2007.
25. Spiral and Real-Time Imaging. NIH/NIBIB Workshop on High-Field Cardiovascular Magnetic Resonance, Washington, DC, September 2006.
26. EPI Artifact Correction using Parallel Imaging. IEEE-EMBS, Special Session on Cardiac Imaging, September 2006.
27. Real-Time Flow Imaging. ISMRM Workshop on Flow and Motion: Imaging Assessment of Cardiovascular and Tissue Mechanics, New York, July 2006.
28. Recent Advances in the Diagnosis of Coronary Artery Disease. North American Konkani Association Medical Symposium, Hamilton, Ontario, July 2006.
29. Real-Time Color Flow MRI. ISMRM 14th Scientific Sessions, Flow and Motion Study Group Meeting, Seattle, May 2006.
30. Spirals at High Field. SCMR 9th Scientific Sessions, Basic Science Plenary Session: Parallel and Other Novel Imaging Techniques, Miami, January 2006.
31. Identification, Modeling and Correction of Image Artifacts. ISMRM 13th Scientific Sessions, Educational Course: MR Physics for Physicists, Miami, May 2005.
32. Real-Time Cardiac Imaging. GE-Asia Seminar Series (five locations): Sydney, New Delhi, Mumbai, Beijing, and Shanghai, March 2005.
33. How to Transition to the Real World. SCMR 8th Scientific Sessions, Trainee and Students Hour, San Francisco, January 2005.
34. Non-cooperative Patients and Arrhythmia: Real-Time and Single Shot Imaging. SCMR 8th Scientific Sessions, Pre-Conference Workshop, San Francisco, January 2005.
35. Cardiovascular 3T Imaging. NASCI 32nd Annual Meeting, Next Generation Cardiac MR Session, Amelia Island, October 2004.
36. Hemodynamic Visualization with Real-Time MRI. University of Toronto Real-Time MRI Workshop, Toronto, July 2003.

COLLOQUIA

University of California, Los Angeles, Department of Radiology, June 2014
 University of Calgary, Alberta, Canada, June 2013
 University of California, San Diego, Center for Functional MRI, May 2013
 University of Southern California, Center for Excellence in Teaching, May 2013
 Cedars-Sinai Medical Center, Biomedical Imaging Research Institute, January 2013
 Seoul National University Hospital, Seoul, South Korea, August 2012
 Neuroscience Research Institute, Gachon University, Incheon, South Korea, August 2012
 NIH / NHLBI Laboratory for Cardiac Energetics, Bethesda, June 2010.
 Linköping University Hospital, Linköping, Sweden, February 2010.
 University of Louisville, Electrical Engineering, Louisville, November 2009
 University of California, San Diego, Penner Biomechanics Seminar, October 2009
 Brigham and Women's Hospital, Department of Radiology, October 2009
 FAMU/FSU College of Engineering, May 2009
 Loma Linda University Medical Center, May 2008
 Yale University, Bioimaging Science Lecture Series, November 2006.
 University of California, San Diego, Center for Functional MRI, August 2006.
 GE Global Research Center, Niskayuna, July 2006.

University of Virginia, Biomedical Engineering, Charlottesville, April 2006.
Johns Hopkins University, Radiology, Baltimore, April 2006.
Florida State University, Computer Science, Tallahassee, November 2004.
NIH / NHLBI Laboratory for Cardiac Energetics, Bethesda, February 2004.
Medtronic AVE Inc., Santa Rosa, June 2003.
Linköping University Hospital, Linköping, Sweden, October 2002.
Guidant Inc., Santa Clara, September 2001.
Agilent Labs, Palo Alto, April 2001.
Kawasaki Medical College, Okayama, Japan, July 2000.

TEACHING & MENTORING

TEACHING and MENTORING GRANTS

- **Principal Investigator**, National Science Foundation, “New GK-12: Body Engineering Los Angeles,” Grant #1045595. August 2011-July 2016. Total: \$1,300,000. (with ~\$1M matching funds from the USC Viterbi School of Engineering)
- **Principal Investigator**, Stevens Institute for Innovation, Innovation Inside Curriculum Grant, “Commercialization of Magnetic Resonance Imaging Technology,” December 2007. \$2,000.

DIRECT TRAINEES

Name	Degrees, Years	Current Position
Joao Luiz Carvalho	PhD, 2004-08	Associate Professor, Universidade de Brasilia (Brazil)
Kyunghyun Sung	PhD, 2004-08	Assistant Professor, University of California, Los Angeles
Hsu-Lei Lee	PhD, 2004-08	Postdoc, Freiburg University (Germany)
Taehoon Shin	PhD, 2004-09 Postdoc, 2009-10	Assistant Professor, University of Maryland
Chia-Ying Liu	Postdoc, 2004-06	Assistant Professor, Johns Hopkins University
Jon-Fredrik Nielsen	Postdoc, 2005-08	Research Assistant Professor, University of Michigan
Yoonchul Kim	PhD, 2005-10 Postdoc, 2010-14	Research Scientist, Samsung Medical Center
Zungho Zun	PhD, 2005-10	Assistant Professor, Children’s National Medical Center, Washington DC
Mahender Makhijani	PhD, 2005-12	Entrepreneur
Houchun Hu	Postdoc, 2006-09	Assistant Professor, Phoenix Children’s Hospital
Samir Sharma	PhD, 2007-12	Postdoc, University of Wisconsin, Madison
Travis Smith	PhD, 2007-12	Research Assistant Professor, Oregon Health Sciences University
Marc Lebel	Postdoc, 2010-12	Scientist, GE Applied Sciences Laboratory
Sajan Lingala	Postdoc, 2014-	
Yinghua Zhu	PhD, 2010-	
Ziyue Wu	PhD, 2011-	
Hung Phi Do	PhD, 2010-	
Terrence Jao	PhD, 2011-	
Vanessa Landes	PhD, 2012-	
Yi Guo	PhD, 2012-	
Ahsan Javed	PhD, 2012-	
Weiyi Chen	PhD, 2013-	
Xin Miao	PhD, 2013-	

INDIRECT TRAINEES (not the primary advisor)

Name	Degrees, Years	Current Position
Erik Bresch	PhD, 2005-2010	Scientist, Philips Research Laboratories
Taehyun Rhee	PhD, 2005-2010	Senior Lecturer, Victoria University of Wellington (New Zealand)
Eamon Doyle	PhD, 2011-	

TRAINEE AWARDS

Yoon-chul Kim, American Heart Association Postdoctoral Fellowship	2013-15
Christopher Sandino, USC McNair Scholar	2013
Travis Smith, Ming Hsieh Institute Best PhD Dissertation Award	2013
Samir Sharma, Best Research “Fast Pitch”, USC EE Research Festival	2012
Travis Smith, American Heart Association Predoctoral Fellowship	2011-12
Samir Sharma, Ming Hsieh Institute Ph.D. Scholar (one of five)	2011-12
Taehoon Shin, American Heart Association Postdoctoral Fellowship	2009-11
Hsu-Lei Lee, USC Women in Science and Engineering, Merit Award	2008
Taehoon Shin, Best Student Paper Honorable Mention, USC EE Department	2008
Joao Carvalho, Best Student Paper Award, USC EE Dept.	2007
Joao Carvalho, USC Dissertation Completion Fellowship	2007-08
Jon-Fredrik Nielsen, American Heart Association Postdoctoral Fellowship	2006-08
Numerous conference travel grants (not practical to list individually)	2005-

DISSERTATION COMMITTEES

- **Ph.D. Thesis Defense and Qualifying Exam:** Dimitrios Pantazis (EE), Manjiang Zhang (Physics), Hsiao-Fen Chou (Civil), Ismail Sebe (EE), Fariba Ariei (EE), Bei Wang (EE), Yuriy Brun (CS), Nilesh Ghugre (BME), Taehyun Rhee (CS), Anand Joshi (EE), Ramakrishnan Iyer (BME), Matthew Behrend (EE), Alec Wong (BME), Kenneth Hayworth (Neuroscience), Jonghye Woo (EE), Sangeetha Somayajula (EE), Hua Hui (EE), Erik Bresch (EE), Jay Mung (BME), Vikram Ramanarayanan (EE), Samantha Cunningham (BME), Wentao Zhu (EE).
- **Ph.D. Qualifying Exam Only:** Changsung Kim (EE), Jingliang Peng (EE), Dahua Xie (EE), Esen Kucukaltun-Yildirim (EE), Belma Dogdas (EE), Abhijit Chaudhari (EE), Yousef Al-Rjoub (Civil), Pankaj Mishra (EE), Chiao Wang (EE), Jong Dae Oh (EE), Sanghee Cho (EE), Sundeep Pattem (EE), Joyita Dutta (EE), Juan Soto (EE), Dongwoo Kang (EE), Matthew Borzage (BME), Wentao Zhu (EE), Yanguang Lin (EE), Adam Bush (BME), Seth Hara (BME), Joseph Crew (BME), Eamon Doyle (BME).
- **M.S. Thesis Committees:** Abhijit Kher (BME), Amrita Rajagopalan (BME).

DIRECTED RESEARCH

- **Medical Students:** Terrence Jao (USC MD/PhD), Gabriel Rudd-Barnard (Drexel MD)
- **Ph.D. Students:** Barry Vanek (EE), Zihong Fan (EE), Firooz Aflatouni (EE), Stephen Tobin (Linguistics), Ximing Wang (BME), Eric Sohn (BME), Adam Bush (BME)
- **M.S. Students:** Kyunghyun Sung (EE), Antonio Ordonez (EE), Aditya Sane (EE), Taek-yoon Nam (EE), Vishwanath Kottignahal (EE), Ashish Medewar (EE), Peter Shin (EE), Vikram Ramanarayanan (EE), Niharika Gajawelli (EE), Jack Chang (EE), Ziyue Wu (BME),

Yinghua Zhu (EE), Divya Varadarajan (EE), Cecilie Anker (Informatics, TU-Denmark), Josephine Jensen (Informatics, TU-Denmark).

- **Undergraduates:** Eamon Doyle (Olin College), Sameer Chopra (UC-Riverside), David Chartash (U Western Ontario), Tim Brochier (USC), Melanie Houselog (USC), Samantha Kaplan (USC), Sheldon Cheng (USC), Christopher Sandino (USC), Samuel Barnes (USC), Andriana Aiyotis (USC)
- **High School Students:** Arjun Viswanathan (Minnetonka High School, Minnesota)

CLASSROOM TEACHING @ USC (student evals: *1.00 is poor, 5.00 is excellent*)

Magnetic Resonance Imaging and Reconstruction (EE 591)

Spring 2004 (4.65), Fall 2004 (4.71), Fall 2005 (5.00), Fall 2007 (4.78), Fall 2009 (4.79), Spring 2012 (4.79).

Advanced Topics in Magnetic Resonance Imaging (EE 691)

Fall 2008 (4.44), Fall 2012 (4.70).

Electrical Engineering Research Seminar (EE 598)

Fall 2012 (4.75), Fall 2013

Engineering Freshman Academy (ENGR 102)

Fall 2011 (4.86 & 4.42), Fall 2012 (4.57 & 4.62), Fall 2013.

Digital Signal Processing (EE 483)

Spring 2005 (4.32).

Introduction to Linear Systems (EE 301)

Spring 2007 (4.12), Spring 2009 (4.45), Spring 2014

Real-Time DSP Laboratory (EE 434L)

Spring 2008 (3.86).

Advanced Real-Time DSP Laboratory (EE 586L)

Spring 2008 (4.44).

Introduction to Electrical Engineering Systems (EE 200L)

Spring 2010 (4.17).

EPIC Programming (programming language for GE MRI scanners, informal course)

Oct-Dec 2004, June-Aug 2005, Feb-April 2006, May-June 2008, July-Aug 2010.

CLASSROOM TEACHING @ Stanford (student evals: *5.00 is poor, 1.00 is excellent*)

Introductory Digital Signal Processing (EE 103)

Summer 2001 (1.43), Summer 2002 (1.25).

Statistical Signal Processing (EE 278)

Summer 2003.

OTHER MENTORING

- Stanford Alumni Mentoring 2009-
- Society for Cardiovascular Magnetic Resonance Mentoring Program 2011-

OTHER OUTREACH

- Prepared a teaching unit on Medical Imaging appropriate for a high-school physics course, for the USC Physics Instant Update, a workshop for LA-area high-school physics teachers run by Prof. Stephan Haas (Physics).

SERVICE

WORKSHOP ORGANIZATION

Program Committee, SCMR Scientific Sessions. Nice, France	2015
Member of Organizing Committee, ISMRM Workshop on Non-Contrast Cardiovascular MRI. Long Beach, CA	2015
Chair, USC Speech MRI Summit. Los Angeles, CA	2014
Member of Organizing Committee, SCMR/ISMRM Joint Workshop on High-Field Cardiovascular Magnetic Resonance. San Francisco, CA	2013
Program Committee, SCMR Scientific Sessions. Orlando, FL	2012
Co-Organizer, SCMR Pre-conference Session on High-Field Cardiovascular Imaging and Basic Science. Phoenix, AZ	2010
Member of Organizing Committee, ISMRM Workshop on Data Sampling and Image Reconstruction. Sedona, AZ	2009
Co-Chair, Workshop on High-Field Cardiovascular MR: An Update. Beverly Hills, CA	2008
Member of Organizing Committee, ISMRM Workshop on Non-Cartesian MRI. Sedona, AZ	2007
Member of Organizing Committee, NIH/NIBIB Workshop on High-Field Cardiovascular MR: the promise, the problems, the potential solutions. Washington DC	2006
Chair, ISMRM Workshop on Real-Time MRI: Dynamic Interactive Imaging and its Applications. Santa Monica, CA	2006

GRANT REVIEW

- National Institutes of Health:
 - ZHL1 CCT-Q C1 Wireless Physiologic Telemetry for Interventional MRI, Sept 2013.
 - ZHL1 CCT-H C4 NHLBI SBIR Phase I/II Contract Review, Feb 2013.
 - ZHL1 CCT-N C2 B Wireless Physiologic Telemetry for Interventional MRI, Feb 2012.
 - ZRG SBIBU55 Academic-Industry Partnerships Panel, Jun 2010.
 - ZHL1 K99/R00 Panel, Feb 2010.
 - SBIB L30 Special Emphasis Panel, High End Shared Instruments Panel, Nov 2009.
- American Heart Association:
 - Western States Bioengineering Panel, Spring 2010.
 - Radiology, Imaging, and Surgery Panel, Fall 2007, Spring 2008, Fall 2008.
- USC Internal Grants:
 - SC-CTSI, Pilot and Translational Research Grants, 2013.
 - “Cardiovascular, Metabolism, and Neuroscience”, “Systems Biology and Bioengineering”
 - SC-CTSI, Pilot and Translational Research Grants, 2012.

- “Biology, Bioengineering, Molecular Medicine”, “Diabetes, Obesity, Metabolic Diseases”
 - Clinical Translational Science Initiative, Pilot and Feasibility Grants, 2008.
 - James H. Zumberge Research and Innovation Fund, 2007.
 - Saban Research Institute, Career Development Fellowships, 2006.
- Other:
 - Technology Foundation STW (Netherlands), Innovation Research Incentive Grants, May 2010.
 - Instituto de Telecomunicações (Portugal), Information Technology Grants, April 2014.

JOURNAL REVIEW

- Reviewer:

Magnetic Resonance in Medicine	2000-
Journal of Magnetic Resonance Imaging	2001-
Journal of Cardiovascular Magnetic Resonance	2002-
IEEE Transactions on Medical Imaging	2007-
MAGMA – Magnetic Resonance Materials in Physics, Biology, and Medicine	2008-
Journal of the American College of Cardiology – Cardiovascular Imaging	2008-
Circulation – Cardiovascular Imaging	2009-
Concepts in Magnetic Resonance Part A	2009-
Radiology	2010-
Investigative Radiology	2010-
PLOS ONE	2013-
- Editorial Board Member:

Journal of Cardiovascular Magnetic Resonance	2002-10
Current Cardiology Reviews	2004-11
- Conference Paper/Abstract Reviewer:

ISMRM Scientific Sessions	2005-
SCMR Scientific Sessions	2012
ISMRM Workshops (several years)	2006-
ISBI	2005-09

OTHER PROFESSIONAL SERVICE

- International Society for Magnetic Resonance in Medicine

Young Investigator Awards Committee, Member	2012-
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- Society for Cardiovascular Magnetic Resonance,

Science Committee, Member	2006-
Science Committee, Chair	2010-12
Election Committee, Member	2011
Annual Meeting Program Committee, Member	2011
- External Review Board, National Institutes of Health, “Training in Cardiac Magnetic Resonance Imaging,” T32 Training Grant (T32HL007846) to Stanford University.

UNIVERSITY SERVICE

University of Southern California

Center for Excellence in Teaching, Faculty Fellow	2013-
Center for Excellence in Teaching, Academic Careers Week, Session Staff	2009-13
3TMRI for Cardiovascular and Neuroimaging, Technical Advisory Board	2006-
University Hospital MRI Unit, Technical Advisory Board	2004-
Dornsife Neuroimaging Center, Technical Advisory Board	2004-12

Viterbi School of Engineering

Appointment, Promotion, and Tenure (APT) Committee Member	2011-13
Viterbi Research Awards Committee	2012
Electrical Engineering Department Unification, Committee Member	2009
Interviewer, Presidential and Trustee Scholars	2006-07

Ming Hsieh Department of Electrical Engineering

Faculty Recruitment Committee	2014
Ming Hsieh Institute	
Advisory Council	2013-
Educational Talks on NSF & NIH Funding	2013
MHI Scholars Selection Committee	2011
Signal and Image Processing Group	
Screening Exam Coordinator	2003-12
Admissions and Fellowship Nomination Committee	2008-12
Annual Faculty Merit Review, Committee Member	2010,12
Faculty Candidate Evaluation (several short appointments)	2006-