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EDUCATION

S.B.	Electrical Engineering	Massachusetts Institute of Technology	May 1988
M.S.	Electrical Engineering	Stanford University	June 1994
Ph.D.	Electrical Engineering	Stanford University	September 1999
MBA	Management	Rady School of Management University of California, San Diego	September 2013

PROFESSIONAL EXPERIENCE

1988-1993	Member of the Technical Staff, Advanced Development and Medical Ultrasound Product Development Groups, Acuson Inc., Mountain View, CA
1993-1999	Research and Teaching Assistant, Space Telecommunications and Radioscience Laboratory, Department of Electrical Engineering, Stanford University
1997-1998	Graduate Student Advisor, Department of Electrical Engineering, Stanford University
1999-2001	Postgraduate Researcher, Magnetic Resonance Physics Group Department of Radiology, University of California, San Diego
2001-2007	Assistant Professor of Radiology, University of California, San Diego
2001-2007	Associate Director for Imaging Software UCSD Center for Functional Magnetic Resonance Imaging
2007-2013	Associate Professor (with Tenure) of Radiology and Bioengineering, University of California, San Diego
2007-Present	Director, UCSD Center for Functional Magnetic Resonance Imaging
2013-Present	Professor (with Tenure) of Radiology, Psychiatry, and Bioengineering, University of California, San Diego

AWARDS AND FELLOWSHIPS

1984	White House Presidential Scholar and National Merit Scholar
1988	Letter of Commendation for Performance in Electromagnetics, M.I.T.
1993	Fannie and John Hertz Foundation Research Fellowship Grant
1997	Gerald J. Lieberman Fellowship, Stanford University
2006	National Center of Leadership in Academic Medicine, UC San Diego
2009	3 rd place Poster award in Functional MRI division (out of 272 posters), 17 th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine
2010	2 nd place Poster award in Functional MRI division (out of 295 posters), 18 th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine
2013	Magna Cum Laude Merit Award, 21 st Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine
2013	Academy of Radiology Research, Distinguished Investigator Award

PROFESSIONAL AND SCIENTIFIC SOCIETIES

2000-Present	International Society for Magnetic Resonance in Medicine
2012-Present	Organization for Human Brain Mapping
1993-2001	Institute of Electrical and Electronics Engineers (IEEE): Signal Processing Society; Engineering in Medicine and Biology Society.
1995-1997	American Geophysical Union

PUBLICATIONS

Refereed Articles:

1. Liu TT, Fraser-Smith AC. Detection of transients in 1/f noise with the undecimated discrete wavelet transform. *Signal Processing, IEEE Transactions on*. 2000;48(5):1458-62. PubMed PMID: 839991@ieeejrns.
2. Wong EC, Luh WM, Liu TT. Turbo ASL: arterial spin labeling with higher SNR and temporal resolution. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2000;44(4):511-5. PubMed PMID: 11025504.
3. Liu TT, Frank LR, Wong EC, Buxton RB. Detection power, estimation efficiency, and predictability in event-related fMRI. *NeuroImage*. 2001;13(4):759-73. doi: 10.1006/nimg.2000.0728. PubMed PMID: 11305903.
4. Miller KL, Luh WM, Liu TT, Martínez A, Obata T, Wong EC, Frank LR, Buxton RB. Nonlinear temporal dynamics of the cerebral blood flow response. *Human Brain Mapping*. 2001;13(1):1-12. PubMed PMID: 11284042.

5. Wong EC, Liu TT, Luh WM, Frank LR, Buxton RB. T(1) and T(2) selective method for improved SNR in CSF-attenuated imaging: T(2)-FLAIR. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2001;45(3):529-32. PubMed PMID: 11241715.
6. Liu TT, Wong EC, Frank LR, Buxton RB. Analysis and design of perfusion-based event-related fMRI experiments. *NeuroImage*. 2002;16(1):269-82. doi: 10.1006/nimg.2001.1038. PubMed PMID: 11969334.
7. Frank LR, Wong EC, Liu TT, Buxton RB. Increased diffusion sensitivity with hyperechos. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2003;49(6):1098-105. doi: 10.1002/mrm.10457. PubMed PMID: 12768588.
8. Buxton RB, Uludağ K, Dubowitz DJ, Liu TT. Modeling the hemodynamic response to brain activation. *NeuroImage*. 2004;23 Suppl 1:S220-33. doi: 10.1016/j.neuroimage.2004.07.013. PubMed PMID: 15501093.
9. Liu TT. Efficiency, power, and entropy in event-related fMRI with multiple trial types. Part II: design of experiments. *NeuroImage*. 2004;21(1):401-13. PubMed PMID: 14741677.
10. Liu TT, Behzadi Y, Restom K, Uludağ K, Lu K, Buracas GT, Dubowitz DJ, Buxton RB. Caffeine alters the temporal dynamics of the visual BOLD response. *NeuroImage*. 2004;23(4):1402-13. doi: 10.1016/j.neuroimage.2004.07.061. PubMed PMID: 15589104.
11. Liu TT, Frank LR. Efficiency, power, and entropy in event-related FMRI with multiple trial types. Part I: theory. *NeuroImage*. 2004;21(1):387-400. PubMed PMID: 14741676.
12. Obata T, Liu TT, Miller KL, Luh WM, Wong EC, Frank LR, Buxton RB. Discrepancies between BOLD and flow dynamics in primary and supplementary motor areas: application of the balloon model to the interpretation of BOLD transients. *NeuroImage*. 2004;21(1):144-53. PubMed PMID: 14741651.
13. Paulus MP, Feinstein JS, Tapert SF, Liu TT. Trend detection via temporal difference model predicts inferior prefrontal cortex activation during acquisition of advantageous action selection. *NeuroImage*. 2004;21(2):733-43. doi: 10.1016/j.neuroimage.2003.09.060. PubMed PMID: 14980576.
14. Uludağ K, Dubowitz DJ, Yoder EJ, Restom K, Liu TT, Buxton RB. Coupling of cerebral blood flow and oxygen consumption during physiological activation and deactivation measured with fMRI. *NeuroImage*. 2004;23(1):148-55. doi: 10.1016/j.neuroimage.2004.05.013. PubMed PMID: 15325361.
15. Behzadi Y, Liu TT. An arteriolar compliance model of the cerebral blood flow response to neural stimulus. *NeuroImage*. 2005;25(4):1100-11. doi: 10.1016/j.neuroimage.2004.12.057. PubMed PMID: 15850728.
16. Liu TT, Wong EC. A signal processing model for arterial spin labeling functional MRI. *NeuroImage*. 2005;24(1):207-15. doi: 10.1016/j.neuroimage.2004.09.047. PubMed PMID: 15588612.
17. Behzadi Y, Liu TT. Caffeine reduces the initial dip in the visual BOLD response at 3 T. *NeuroImage*. 2006;32(1):9-15. doi: 10.1016/j.neuroimage.2006.03.005. PubMed PMID: 16635577.

18. Bolar DS, Levin DL, Hopkins SR, Frank LF, Liu TT, Wong EC, Buxton RB. Quantification of regional pulmonary blood flow using ASL-FAIRER. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2006;55(6):1308-17. doi: 10.1002/mrm.20891. PubMed PMID: 16680681.
19. Restom K, Behzadi Y, Liu TT. Physiological noise reduction for arterial spin labeling functional MRI. *NeuroImage*. 2006;31(3):1104-15. doi: 10.1016/j.neuroimage.2006.01.026. PubMed PMID: 16533609.
20. Wong EC, Cronin M, Wu W-C, Inglis B, Frank LR, Liu TT. Velocity-selective arterial spin labeling. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2006;55(6):1334-41. doi: 10.1002/mrm.20906. PubMed PMID: 16700025.
21. Woolrich MW, Chiarelli P, Gallichan D, Perthen J, Liu TT. Bayesian inference of hemodynamic changes in functional arterial spin labeling data. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2006;56(4):891-906. doi: 10.1002/mrm.21039. PubMed PMID: 16964610.
22. Behzadi Y, Restom K, Liao J, Liu TT. A component based noise correction method (CompCor) for BOLD and perfusion based fMRI. *NeuroImage*. 2007;37(1):90-101. doi: 10.1016/j.neuroimage.2007.04.042. PubMed PMID: 17560126.
23. Brown GG, Clark C, Liu TT. Measurement of cerebral perfusion with arterial spin labeling: Part 2. Applications. *Journal of the International Neuropsychological Society : JINS*. 2007;13(3):526-38. doi: 10.1017/S1355617707070634. PubMed PMID: 17445302.
24. Brown GG, Perthen JE, Liu TT, Buxton RB. A primer on functional magnetic resonance imaging. *Neuropsychology review*. 2007;17(2):107-25. doi: 10.1007/s11065-007-9028-8. PubMed PMID: 17468956.
25. Liu TT, Brown GG. Measurement of cerebral perfusion with arterial spin labeling: Part 1. Methods. *Journal of the International Neuropsychological Society : JINS*. 2007;13(3):517-25. doi: 10.1017/S1355617707070646. PubMed PMID: 17445301.
26. Restom K, Bangen KJ, Bondi MW, Perthen JE, Liu TT. Cerebral blood flow and BOLD responses to a memory encoding task: a comparison between healthy young and elderly adults. *NeuroImage*. 2007;37(2):430-9. doi: 10.1016/j.neuroimage.2007.05.024. PubMed PMID: 17590353; PubMed Central PMCID: PMC2214854.
27. Buracas GT, Liu TT, Buxton RB, Frank LR, Wong EC. Imaging periodic currents using alternating balanced steady-state free precession. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2008;59(1):140-8. doi: 10.1002/mrm.21457. PubMed PMID: 18050317.
28. Liao J, Perthen JE, Liu TT. Caffeine reduces the activation extent and contrast-to-noise ratio of the functional cerebral blood flow response but not the BOLD response. *NeuroImage*. 2008;42(1):296-305. doi: 10.1016/j.neuroimage.2008.04.177. PubMed PMID: 18514545; PubMed Central PMCID: PMC2565805.
29. Lu K, Liu TT, Bydder M. Optimal phase difference reconstruction: comparison of two methods. *Magnetic Resonance Imaging*. 2008;26(1):142-5. doi: 10.1016/j.mri.2007.04.015. PubMed PMID: 17572035.

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31. Perthen JE, Bydder M, Restom K, Liu TT. SNR and functional sensitivity of BOLD and perfusion-based fMRI using arterial spin labeling with spiral SENSE at 3 T. *Magnetic Resonance Imaging*. 2008;26(4):513-22. doi: 10.1016/j.mri.2007.10.008. PubMed PMID: 18158226; PubMed Central PMCID: PMC2396944.
32. Perthen JE, Lansing AE, Liao J, Liu TT, Buxton RB. Caffeine-induced uncoupling of cerebral blood flow and oxygen metabolism: a calibrated BOLD fMRI study. *NeuroImage*. 2008;40(1):237-47. doi: 10.1016/j.neuroimage.2007.10.049. PubMed PMID: 18191583; PubMed Central PMCID: PMC2716699.
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36. Liao J, Liu TT. Inter-subject variability in hypercapnic normalization of the BOLD fMRI response. *NeuroImage*. 2009;45(2):420-30. doi: 10.1016/j.neuroimage.2008.11.032. PubMed PMID: 19111622; PubMed Central PMCID: PMC2646818.
37. Rack-Gomer AL, Liao J, Liu TT. Caffeine reduces resting-state BOLD functional connectivity in the motor cortex. *NeuroImage*. 2009;46(1):56-63. doi: 10.1016/j.neuroimage.2009.02.001. PubMed PMID: 19457356; PubMed Central PMCID: PMC2686062.
38. Brumm KP, Perthen JE, Liu TT, Haist F, Ayalon L, Love T. An arterial spin labeling investigation of cerebral blood flow deficits in chronic stroke survivors. *NeuroImage*. 2010;51(3):995-1005. doi: 10.1016/j.neuroimage.2010.03.008. PubMed PMID: 20211268; PubMed Central PMCID: PMC2879883.
39. Jung Y, Wong EC, Liu TT. Multiphase pseudocontinuous arterial spin labeling (MP-PCASL) for robust quantification of cerebral blood flow. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2010;64(3):799-810. doi: 10.1002/mrm.22465. PubMed PMID: 20578056.
40. Liu TT, Liao J. Caffeine increases the linearity of the visual BOLD response. *NeuroImage*. 2010;49(3):2311-7. doi: 10.1016/j.neuroimage.2009.10.040. PubMed PMID: 19854278; PubMed Central PMCID: PMC2818336.

41. Tian P, Teng IC, May LD, Kurz R, Lu K, Scadeng M, Hillman EMC, De Crespigny AJ, D'Arceuil HE, Mandeville JB, Marota JJA, Rosen BR, Liu TT, Boas DA, Buxton RB, Dale AM, Devor A. Cortical depth-specific microvascular dilation underlies laminar differences in blood oxygenation level-dependent functional MRI signal. *Proceedings of the National Academy of Sciences of the United States of America*. 2010;107(34):15246-51. doi: 10.1073/pnas.1006735107. PubMed PMID: 20696904; PubMed Central PMCID: PMC2930564.
42. Diwakar M, Tal O, Liu TT, Harrington DL, Srinivasan R, Muzzatti L, Song T, Theilmann RJ, Lee RR, Huang M-X. Accurate reconstruction of temporal correlation for neuronal sources using the enhanced dual-core MEG beamformer. *NeuroImage*. 2011;56(4):1918-28. doi: 10.1016/j.neuroimage.2011.03.042. PubMed PMID: 21443954.
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44. Snider J, Plank M, May L, Liu TT, Poizner H. Adaptation of a haptic robot in a 3T fMRI. *Journal of visualized experiments : JoVE*. 2011(56). doi: 10.3791/3364. PubMed PMID: 21989084; PubMed Central PMCID: PMC3227168.
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46. Bangen KJ, Restom K, Liu TT, Wierenga CE, Jak AJ, Salmon DP, Bondi MW. Assessment of Alzheimer's disease risk with functional magnetic resonance imaging: an arterial spin labeling study. *Journal of Alzheimer's disease* 2012;31 Suppl 3:S59-74. doi: 10.3233/JAD-2012-120292. PubMed PMID: 22531427; PubMed Central PMCID: PMC3443702.
47. Buracas GT, Jung Y, Lee J, Buxton RB, Wong EC, Liu TT. On multiple alternating steady states induced by periodic spin phase perturbation waveforms. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2012;67(5):1412-8. doi: 10.1002/mrm.23105. PubMed PMID: 21826730; PubMed Central PMCID: PMC3278556.
48. Glover GH, Mueller BA, Turner JA, van Erp TGM, Liu TT, Greve DN, Voyvodic JT, Rasmussen J, Brown GG, Keator DB, Calhoun VD, Lee HJ, Ford JM, Mathalon DH, Diaz M, O'Leary DS, Gadde S, Preda A, Lim KO, Wible CG, Stern HS, Belger A, McCarthy G, Ozyurt B, Potkin SG. Function biomedical informatics research network recommendations for prospective multicenter functional MRI studies. *Journal of magnetic resonance imaging : JMRI*. 2012;36(1):39-54. doi: 10.1002/jmri.23572. PubMed PMID: 22314879; PubMed Central PMCID: PMC3349791.
49. He H, Liu TT. A geometric view of global signal confounds in resting-state functional MRI. *NeuroImage*. 2012;59(3):2339-48. doi: 10.1016/j.neuroimage.2011.09.018. PubMed PMID: 21982929; PubMed Central PMCID: PMC3254803.
50. Huang M-X, Nichols S, Robb A, Angeles A, Drake A, Holland M, Asmussen S, Dandrea J, Chun W, Levy M, Cui L, Song T, Baker DG, Hammer P, McLay R, Theilmann RJ, Coimbra R, Diwakar M, Boyd C, Neff J, Liu TT, Webb-Murphy J, Farinpour R, Cheung C, Harrington

- DL, Heister D, Lee RR. An automatic MEG low-frequency source imaging approach for detecting injuries in mild and moderate TBI patients with blast and non-blast causes. *NeuroImage*. 2012;61(4):1067-82. doi: 10.1016/j.neuroimage.2012.04.029. PubMed PMID: 22542638.
51. Jacobus J, Goldenberg D, Wierenga CE, Tolentino NJ, Liu TT, Tapert SF. Altered cerebral blood flow and neurocognitive correlates in adolescent cannabis users. *Psychopharmacology*. 2012;222(4):675-84. doi: 10.1007/s00213-012-2674-4. PubMed PMID: 22395430; PubMed Central PMCID: PMC3510003.
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 53. Rack-Gomer AL, Liu TT. Caffeine increases the temporal variability of resting-state BOLD connectivity in the motor cortex. *NeuroImage*. 2012;59(3):2994-3002. doi: 10.1016/j.neuroimage.2011.10.001. PubMed PMID: 22032947; PubMed Central PMCID: PMC3350816.
 54. Shin DD, Liu TT, Wong EC, Shankaranarayanan A, Jung Y. Pseudocontinuous arterial spin labeling with optimized tagging efficiency. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2012;68(4):1135-44. doi: 10.1002/mrm.24113. PubMed PMID: 22234782; PubMed Central PMCID: PMC3345172.
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 56. Wierenga CE, Dev SI, Shin DD, Clark LR, Bangen KJ, Jak AJ, Rissman RA, Liu TT, Salmon DP, Bondi MW. Effect of mild cognitive impairment and APOE genotype on resting cerebral blood flow and its association with cognition. *Journal of cerebral blood flow and metabolism : official journal of the International Society of Cerebral Blood Flow and Metabolism*. 2012;32(8):1589-99. doi: 10.1038/jcbfm.2012.58. PubMed PMID: 22549621; PubMed Central PMCID: PMC3421098.
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 58. Jung Y, Samsonov AA, Liu TT, Buracas GT. High efficiency multishot interleaved spiral-in/out: Acquisition for high-resolution BOLD fMRI. *Magnetic resonance in medicine : official journal of the Society of Magnetic Resonance in Medicine / Society of Magnetic Resonance in Medicine*. 2013. doi: 10.1002/mrm.24476. PubMed PMID: 23023395; PubMed Central PMCID: PMC3535559.
 59. Greve DN, Brown GG, Mueller BA, Glover G, Liu TT. A Survey of the Sources of Noise in Fmri. *Psychometrika*. 2013;78(3):396-416. doi: 10.1007/S11336-012-9294-0. PubMed PMID: 25106392
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64. Nation DA, Wierenga CE, Clark LR, Dev SI, Stricker NH, Jak AJ, Salmon DP, Delano-Wood L, Bangen KJ, Rissman RA, Liu TT, Bondi MW. Cortical and subcortical cerebrovascular resistance index in mild cognitive impairment and Alzheimer's disease. *Journal of Alzheimer's disease*. 2013;36(4):689-98. doi: 10.3233/JAD-130086. PubMed PMID: 23666173.
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99. Jung Y, Liu TT, "Fast CBF Estimation in Multi-Phase Pseudo-Continuous Arterial Spin Labeling (MP PCASL) Using Signal Demodulation," in 18th Annual Meeting of the International Society for Magnetic Resonance in Medicine, Stockholm, 2010, p. 1739.
100. Lu K, Liu TT, Jung Y, "Arterial Transit Delay Measurement Using Pseudo-Continuous ASL with Variable TR and Interleaved Post-Labeling Delays," in 18th Annual Meeting of the International Society for Magnetic Resonance in Medicine, Stockholm, 2010, p. 1769.
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116. Wong CW, Olafsson O, Tal O, Rack-Gomer AL, Liu TT, "Neuroelectrical Basis of the Resting-State BOLD Global Signal as Determined with Simultaneous EEG-fMRI Measures " in 19th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Montreal, 2011, p. 1551.
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118. Harris AD, Murphy K, Diaz C, Saxena N, Hall HE, Liu TT, Wise RG, "Quantifying the Dynamics of the Cerebral Blood Flow Response to Hypoxia," in 20th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Melbourne, Australia, 2012, p. 2023.
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138. Yan FX, Shin DD, Chen CJ, Liu TT, Liu HL, "CBF-Based Modular Architecture Derived from ASL MRI," in 22nd Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Milan, 2014, p. 4196.
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140. Falahpour M, Haase L, Paulus MP, Liu TT, "Resting state functional connectivity predicts changes in interoceptive awareness following mindfulness training," in 23rd Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Toronto, 2015, p. 2080.
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142. Olafsson V, Kundu P, Liu TT, "Multi-Echo Independent Component Analysis (ME-ICA) of High Frequency Resting-State fMRI Data," in 23rd Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Toronto, 2015, p. 2053.
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144. Wierenga C, Bischoff-Grethe A, Rasmussen G, Bailer U, Liu TT, Kaye W, "Women Remitted from Anorexia Nervosa have Aberrant Baseline Cerebral Blood Flow in Gustatory and Homeostatic Neural Circuitry in Response to Hunger," in American College of Neuropsychopharmacology, Hollywood, Florida, 2015, p. M49.
145. Wong CW, Liu TT, "Differences in the resting-state fMRI global signal amplitude between the eyes open and eyes closed states are related to changes in EEG vigilance," in 23rd Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Toronto, 2015, p. 2116.

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147. Falahpour M, Wong CW, Liu TT, "The Resting State FMRI Global Signal Is Negatively Correlated with Time-Varying EEG Vigilance," in 24th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Singapore, 2016, p. 641.
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152. Nalci A, Rao B, Liu TT, "Sparse Estimation of Quasi-Periodic Spatiotemporal Components in Resting-State FMRI," in 24th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Singapore, 2016, p. 3824.
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156. Nalci A, Liu TT, "On the Relation Between Global Signal Normalization, Global Signal Subtraction, and Global Signal Regression in Resting-State FMRI," in 25th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, 2017, p. 1655.
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Theses and Technical Reports:

1. Liu, TT. Swelling and permeability of poly-methacrylic acid polymer membranes. *S.B. Dissertation, Massachusetts Institute of Technology*, 72 pages, 1988.
2. Liu, TT. Dithering requirements for analog-to-digital conversion in an ultrasound receiver system. *Internal Technical Report, Acuson Inc.*, 18 pages, 1991.
3. Liu, TT., Fraser-Smith, A.C. Hayward Fault earthquake prediction project: ULF magnetic field measurements. *Technical Report D180-1, Space, Telecommunications, and Radioscience Laboratory, Stanford University*, 57 pages, 1996.
4. Liu, TT. Ultra-low frequency magnetic fields in the San Francisco Bay Area: Measurements, models, and signal processing. *Ph.D. Dissertation, Stanford University*, 190 pages, 1999.

Patents:

1. Cole, C.R., Gee, A., Liu, TT. Method and apparatus for transmit beamformer system. *Patent #5,675,554*, Oct. 7, 1997, USA.
2. Wong, E.C., Liu, TT., Improved Perfusion Imaging Using MRI With Velocity-Selective Arterial Spin Labeling Without Spatial Selectivity, *Patent #7587233*, September 8, 2009.
3. Jung, Y., Wong, E.C., Liu, TT., Multi-phase Pseudo-Continuous Arterial Spin Labeling, *Patent 20100240983*, January 3, 2011.
4. Huang, MX, Lee RR, Diwakar M, Tal O, Liu TT. Enhanced multi-core beamformer algorithm for sensor array processing. *Patent #20130204114*, August 8, 2013.

RESEARCH

Active Grants:

1. Principal Investigator, Assessing Vigilance with Resting-State fMRI, NIH R21 MH112155, 03/01/2017 to 2/28/2019.
2. Co-Investigator, (R. Buxton, PI) Physiological Basis of Functional MRI, NIH R01 NS36722, 02/20/1998 – 02/28/2018.
3. Co-Investigator, (I. Grant, PI), Translational Methamphetamine AIDS Research Center (TMARC), NIH 5 P50 DA026306, 09/30/2009 – 05/31/2019.
4. Co-Investigator, (S. Tapert, PI), National Consortium on Alcohol and NeuroDevelopment in Adolescence: San Diego, NIH U-01 AA021692, 09/01/2012 – 06/30/2017
5. Subaward PI, (A. Mueller PI) The Autistic Brain over 45: The Anatomic, Functional, and Cognitive Phenotype, NIH R01 MH103494, 05/08/2015 – 01/31/2020.
6. Subaward PI, (I. Fishman PI) Multimodal Imaging of Early Neural Signature in Autism Spectrum Disorder, NIH R01 MH107802, 09/01/2015 – 08/31/2020.
7. Co-Investigator (E. Wong PI), Microdevice Mediated Functional Brain Imaging with High Temporal and Spatial Resolution, R21EY027609-01, 9/30/2016 – 7/31/2018.
8. Co-Investigator (A. Dale PI), ABCD-USA Consortium: Data Analysis Center, U24 DA041123-02, 09/30/2015 – 05/31/2020
9. Co-Investigator (L. Frank PI), New Quantitative Neuroimaging Metrics of Structural and Functional Connectivity of the Locus Coeruleus as a Novel Biomarker of Alzheimer's Disease Pathogenesis and Progression, NIH R01 AG054049, 09/15/2017 – 04/30/2022

Completed Grants

1. Principal Investigator, Quantitative Spin Tagging, GE Healthcare, 114-2014-IIR-0031, 10/17/2014 – 4/16/2017.
2. Principal Investigator, High Performance fMRI, GE Healthcare, 114-2014-IIR-0032, 10/17/2014 – 4/16/2017.
3. Subaward PI, (A. Mueller, PI), FMRI and EEG Approaches to the 'Resting State' in ASD, R21 MH102558, 6/01/2014 to 05/31/2016.
4. Principal Investigator, Federated Database, Protocols, and Tools for Arterial Spin Labeling CBF Measures, NIH R01 MH084796, 08/01/2009-04/30/2015.
5. Principal Investigator, Global Signal Correction in Resting State fMRI, NIH R21 MH096495, 01/27/2011-11/30/14.
6. Principal Investigator, Quantitative Spin Tagging and Streamlined Functional MRI, GE Healthcare, Exh-39, 07/01/2011-07/31/2013.
7. Principal Investigator, Neurovascular Factors in Functional MRI, NIH R01 NS051661, 8/01/2006 – 07/31/2012.
8. Principal Investigator, Magnet for a 7T Small Animal MRI System, NIH S10 RR031555, 07/06/2011-06/30/2012.
9. Principal Investigator, Upgrade of the UCSD 3T Whole body Magnetic Resonance Imaging System, S10 RR026480, 08/15/2006-02/17/2011.

10. Principal Investigator, Nonlinear Analysis and Design of Experiments for Functional MRI, Whitaker Foundation Biomedical Engineering Research Grant, 9/1/2002 – 8/31/2006.
11. Principal Investigator, Alteration of Hippocampal Perfusion as an Early Indicator of Alzheimer's Disease, Dana Foundation Clinical Hypotheses Program In Imaging, 4/1/2002 – 3/31/2006.
12. Subcontract PI, (H. Poizner, PI), How Unsupervised Learning Impacts Training: From Brain to Behavior, ONR GRANT10124974, 10/01/2009 – 09/30/2015
13. Neuroimaging Core Leader and Co-Investigator, (M. Paulus, PI), Center on Interoceptive Dysregulation in Addiction, NIH RO1 DA027834, 03/15/2010 – 02/28/2014
14. Co-Investigator, (W. Kremen, PI), The VESTA Longitudinal MRI Twin Study of Aging, NIH 2 R01 AG022381-07, 09/30/2009 - 08/31/2014
15. Co-Investigator, (L. Eyer, PI), Structural & Functional Brain Aging in Bipolar Disorder, NIH 1 R01 MH083968-01A2, 12/01/2009 - 11/30/2014
16. Co-Investigator, (L. Frank, PI), Brain Responses to Visual Stimuli in Sharks Using fMRI, NSF EAGER 1143389, 09/15/2011-08/31/2013.
17. Co-Investigator, (M. Bondi, PI), Cognitive Abilities of At-Risk elderly for Dementia, NIH 2 R01 AG012674-11A2, 04/20/1994 - 05/31/2013.
18. Co-Investigator, (E.C. Wong, PI), Arterial Spin Labeling for fMRI, NIH R01 NS41925, 09/25/2001 - 08/31/2005.
19. Co-Investigator, (P.J. Townsend, PI), Neuroanatomic Change and Attention Dynamics in Aging, NIH R01 AG18030, 09/01/2001 - 08/31/2006.
20. Co-Investigator, (R.B. Buxton, PI), Hemodynamic Response to Brain Activation, NIH R01 NS42069, 9/30/2002 - 8/30/2006.
21. Co-Investigator, (J. Stiles, PI) Developmental Changes in Visuospatial Processes: RT-fMRI, NIH R01 HD041481, 04/01/2003-03/31/2008.
22. Co-Investigator, (D. Galasko, PI) Alzheimer's Disease Research Center, NIH P50 AG005131 04/01/2004-03/31/2009.
23. Co-Investigator, (G. Buracas, PI), Neuromodulation of BOLD fMRI Signal during Cognitive Tasks, NIH R21 MH70625, 2/01/2006 - 03/31/2009.
24. Co-Investigator, (L. Frank, PI) High Angular Resolution Diffusion Imaging with MRI, NIH R01 MH64729, 12/01/2003-11/30/2009.
25. Co-Investigator, (I. Grant, PI), NeuroAIDS: Effects of Methamphetamine and HCV - 3: Functional MRI, NIH P01 DA12065, 07/01/1999 - 04/30/2010.
26. Co-Investigator, (M. Stein, PI), PharmacofMRI to Identify New Anxiolytics: A Human Bioassay, NIH R01 MH75792, 07/20/2006-6/30/2010.
27. Co-Investigator, (D. Swinney, PI), Neural Correlates of Language Recovery in Aphasia: fMRI Investigations, NIH R01 DC007213, 07/01/2005-6/30/2010.
10. Co-Investigator, (G. Buracas, PI), MRI of Weak Periodic Currents using Steady State Free Precession, R21 EB008187, 07/01/2008-06/30/2010.
28. Co-Investigator, (S. Potkin, PI). Functional Biomedical Informatics Research Network, NIH U24 RR021992, 12/01/2005-11/30/2010.

29. Co-Investigator, (M. Schukit, PI), Level of Response to Alcohol and Brain Functioning, NIH R01 AA0015760, 08/15/06-06/30/2011.
30. Co-Investigator, (M. Paulus, PI) Neurobiology of Transition to Stimulant Dependence, NIH R01 DA016663, 06/01/2004-07/31/2011.
31. Co-Investigator, (E. Courchesne, PI), Biomarkers of Autism at 12 months: From Brain Overgrowth to Genes, NIH 5 P50 MH081755-03, 08/06/2007 - 07/31/2012.
32. Co-Investigator, (E. Courchesne, PI), fMRI Studies of Neural Dysfunction in Autistic Toddlers, NIH 5 P50 MH036840-03, 09/01/2007 - 07/31/2012.
33. Co-Investigator, (D. Dubowitz, PI), Cerebral Response to Sustained Hypoxia, NIH 5 R01 NS053934-03, 06/15/2007- 05/31/2012
34. Co-Investigator, (M. Stein, PI). Neural Substrates of Anticipation and Interoception in Anxiety Disorders, NIH R01 MH65413, 07/01/2003 - 05/31/2012.

TEACHING

Formal Courses

As primary instructor

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| Winter 2002 | Bioengineering 207, Introduction to Magnetic Resonance Imaging |
| Fall 2003 to 2017 | Bioengineering 280A, Principles of Biomedical Imaging |

As Guest Lecturer

- | | |
|---------------------|---|
| Winter 2017 | School of Medicine 277A, Functional Magnetic Resonance Imaging: Methods and Analysis |
| Fall 2015 | School of Medicine 277A, Functional Magnetic Resonance Imaging: Methods and Analysis |
| Fall 2006 to 2014 | School of Medicine 276A, Functional Magnetic Resonance Imaging in Cognitive Neuroscience: Foundations |
| Spring 2006 to 2012 | School of Medicine 276B, Functional Magnetic Resonance Imaging in Cognitive Neuroscience: Design and Analysis |
| Winter 2006 to 2012 | School of Medicine 276C, Functional Magnetic Resonance Imaging in Cognitive Neuroscience: Advanced Topics |
| Spring 2000 to 2012 | Neuroscience 200C, Neural Basis of Behavior |
| Spring 2005 to 2006 | Bioengineering 280B, Comparative Biomedical Imaging |
| Fall 2010 to 2014 | Neurosciences Graduate Program Bootcamp |
| Spring 2015, 2018 | Music 206, Embodied Performance |

Supervision and Mentorship of Postdoctoral Scholars and Graduate Students

Project Scientist and Postdoctoral Scholars:

Youngkyoo Jung, Ph.D. Assistant Project Scientist at UCSD from 2008-2010. Current Position: Associate Professor, Radiology, Wake Forest University.

Kun Lu, Ph.D., Postdoctoral Scholar at UCSD from 2003-2005. Assistant Project Scientist from 2005-2007. Current Position: Clinical Applications Scientist, Philips Healthcare. .

Joanna Perthen, Ph.D., Postdoctoral Scholar at UCSD from 2004-2006. Assistant Project Scientist from 2006-2007. Current Position: Radiologist, Newcastle Hospitals Trust, United Kingdom.

David Shin, Ph.D., Postdoctoral Scholar at UCSD from 2009-2010. Current Position: Associate Development Engineer, Center for Functional MRI, UCSD.

Valur Olafsson, Ph.D., Postdoctoral Scholar at UCSD from 2009-Present. Current Position: Technical Director, MRI Center, Northeastern University. .

Chi Wah (Alec) Wong, Ph.D., Postdoctoral Scholar at UCSD from 2009-2013. Current Position: Data Science Analyst, Southern California Edison.

Lisbeth Evers, Ph.D. Postdoctoral Scholar at UCSD from 2011-2013. Current Position: Assistant Professor, Department of Psychology, Maastricht University, The Netherlands.

Maryam Falahpour, Ph.D. Postdoctoral Scholar at UCSD, 2013-2017. Current Position: Assistant Development Engineer, Center for Functional MRI, UCSD.

Rebecca Rakow-Penner, M.D., Ph.D., Radiology Research Resident at UCSD, 2012-2013.

Andrew Sung, M.D., Radiology Research Resident at UCSD, 2014-2015.

Brendon Bagley, M.D., Radiology Research Resident at UCSD, 2015-2016.

Graduate Students:

Karam S. Sidaros, Ph.D. Technical University of Denmark, 2002, "Slice Profile Effects in MR Perfusion Imaging using Pulsed Arterial Spin Labeling." Served as co-advisor during Dr. Sidaros's visit to UCSD in 2000-2001. Current Position: Research Manager, Head of Section,, Hvidovre Hospital and Danish Research Centre for Magnetic Resonance.

Yashar Behzadi, Ph.D. Thesis: "Variability in Functional Magnetic Resonance Imaging: Influence of the Baseline Vascular State and Physiological Fluctuations," Department of Bioengineering, University of California, San Diego; 2002-2006. Current Position: Chief Product Officer, Medbio Limited, Palo Alto, CA.

Khaled S. Restom, M.D., M.S. Thesis: "Image based physiological noise correction for perfusion-based functional MRI." Department of Bioengineering, University of California, San Diego, 2005. Current Position: Radiology Resident, UC San Diego

Joy Liao, M.D., Ph.D., Thesis: "Baseline Effects in Functional Magnetic Resonance Imaging," Department of Bioengineering, University of California, San Diego; 2005-2008. Current Position: Assistant Professor of Radiology, University of Arizona.

Anna Leigh Rack-Gomer, Ph.D. Thesis: "Baseline effects on resting-state functional connectivity," Department of Bioengineering, University of California, San Diego; 2007-2011. Current Position: Senior Research Engineer, Dexcom Inc., San Diego.

Hongjian He, Ph.D., Visiting Graduate Student, Zhejiang University, China, 2008 – 2010. Current Position: Associate Professor, Zhejiang University, China.

Omer Tal, Ph.D. Thesis: “Resting-State Magnetoencephalography: Methods and Applications,” Department of Bioengineering, University of California, San Diego; 2009-2014. Current Position: Consultant

Alican Nalci, Ph.D. Candidate, Department of Electrical and Computer Engineering, University of California San Diego. 2015-present.

Jianchu Xu, M.S. Candidate, Department of Electrical and Computer Engineering, University of California San Diego. 2016-2017. Current Position: Software Engineer, Pocket Gems

Peter Joris, Ph.D., Visiting Graduate Student, Maastricht University, 2015-2016. Current Position: Assistant Professor, Department of Human Biology, Maastricht University.

Undergraduate Students:

Jeannette Guziel, B.S., Department of Psychology, 2002, “Visualization Software for MR Angiography,” Final report for UCSD Faculty Mentor Program.

Khaled Restom, Role: Research Adviser (3/02 to 9/02) (B.S. Degree Awarded in 2002)

Ghislain Tchanchou, MARC Program, Role: Mentor (7/11 – 4/12)

Leon Zhou, Undergraduate Summer Intern, Massachusetts Institute of Technology, Summer 2011

Ben Bulow, Undergraduate Summer Intern, University of Chicago, Summer 2013 and 2014

Lijia Zhang, Visiting Undergraduate Research Student, Tsinghua University, Summer 2014)

Dalin Guo, Visiting Undergraduate Research Student, Beijing Institute of Technology, July 2015 to March 2016.

Merielle Redwine, Visiting Undergraduate Student, California State University San Marcos, July 2016 to August 2016.

Junyu Wang, Visiting Undergraduate Student, Beijing Jiaotong University, May 2016 to July 2016.

Yu Chang, Visiting Undergraduate Student, National Yangming University, UCSD International Summer Research Program, July to August 2017

M.S. and Ph.D. Dissertation Committees

August Tuan Department of Neurosciences, UCSD.

Ashok Swaminathan Department of Electrical and Computer Engineering, UCSD.

Katherine Bangen SDSU-UCSD Joint Doctoral Program in Psychology.

Kok-Lim Chan Department of Electrical and Computer Engineering, UCSD.

Katherine Bangen	Department of Psychology, Joint UCSD/SDSU Ph.D. Program.
Andrea Panigada	Department of Electrical and Computer Engineering, UCSD.
Jianyu Zhu	Department of Electrical and Computer Engineering, UCSD.
Ahsan Samiee	Department of Mechanical and Aerospace Engineering, UCSD.
Rosanna Haut	Department of Mathematics, UCSD.
Kathleen Brumm	Joint UCSD/SDSU Ph.D. Program in Language and Communicative Disorders
Benjamin McKenna	SDSU/UCSD Joint Doctoral Program in Psychology.
Kevin Wang	Department of Electrical and Computer Engineering, UCSD.
Gerry Taylor	Department of Electrical and Computer Engineering, UCSD.
Mithun Diwakar	Department of Bioengineering, UCSD.
Anna Leigh Rack-Gomer	Department of Bioengineering, UCSD.
Christian Venerus	Department of Electrical and Computer Engineering, UCSD
Martin Barrio	Department of Bioengineering, UCSD
Matthew Webster	Department of Physics, UCSD
Omer Tal	Department of Bioengineering, UCSD
Michael Folkerts	Department of Physics, UCSD
Ching-Fu Chen	Department of Electrical Engineering, UCSD
Wutu Lin	Department of Neuroscience, UCSD
Simone Sternini	Department of Structural Engineering, UCSD
Margherita Capriotti	Department of Structural Engineering, UCSD
Mieko Hirabayashi	Department of Bioengineering, UCSD
Suhas Budhiraja	Department of Bioengineering, UCSD
Yiquan Wu	Department of Bioengineering, UCSD
Derui Kong	Department of Electrical Engineering, UCSD

Seminars and Invited Lectures

1. "ULF Magnetic Field Measurements Along the Hayward Fault." Invited speaker, STARLAB Seminar, Department of Electrical Engineering, Stanford University. November 13, 1996.
2. "ULF Magnetic Fields in the San Francisco Bay Area." Invited speaker, Applied Electromagnetics Laboratory, SRI International, Menlo Park, CA. April 26, 1999.
3. "Designing Experiments for Event-Related fMRI." Invited Speaker, fMRI Users Group Meeting, University of California, San Diego. March 2, 2001.

4. "Detection Power, Estimation Efficiency, and Predictability in the Design of Experiments for fMRI." Invited Speaker, Department of Psychiatry, University of California, San Diego. April 16, 2001.
5. "The Design of fMRI Experiments with Multiple Trial Types." Invited Speaker, Department of Psychiatry, University of California, San Diego. December 16, 2002.
6. "Perfusion Functional MRI", Invited Educational Talk for the 11th Meeting of the International Society for Magnetic Resonance in Medicine, Toronto, Canada, July 7, 2003.
7. "Perfusion Functional MRI", Invited Educational Talk for the 12th Meeting of the International Society for Magnetic Resonance in Medicine, Kyoto, Japan, May 18, 2004.
8. "The Geometry of fMRI Statistics", Invited Talk for UCLA Institute of Pure and Applied Mathematics, Graduate Summer School in Mathematics in Brain Imaging, July 22, 2004.
9. "Probing the Dynamics of Neurovascular Coupling with Functional MRI," Grand Rounds, Department of Radiology, University of California, San Diego, April 26, 2005.
10. "The Hemodynamic Response in Functional MRI," Invited Lecture for Methods in Genetics and Imaging Workshop, Department of Neuroscience, University of California, San Diego, August 2, 2005.
11. "Perfusion Functional MRI", Invited talk for the ISMRM Educational Program on Multi-Modal fMRI: Physiology, Acquisition, and Analysis, 14th ISMRM Scientific Meeting, May 7, 2006, Seattle WA
12. "Vascular Dynamics in Functional MRI", Invited Speaker, Center for Mind and Brain and Department of Biomedical Engineering, University of California, Davis, February 21, 2007.
13. "Vascular Dynamics in Functional MRI", Invited Speaker, Imaging Research Center and Department of Biomedical Engineering, University of Texas at Austin, February 22, 2007.
14. "Vascular Dynamics in Functional MRI", Invited Speaker, Brain Imaging and Analysis Center, Duke University, February 28, 2007.
15. "Perfusion Functional MRI", Invited talk for the ISMRM Educational Program on fMRI: Basics to Cutting Edge, 15th ISMRM Scientific Meeting, May 19, 2007, Berlin, Germany.
16. "Optimization of Designs for fMRI", Invited talk for UCLA Advanced Neuroimaging Summer School, August 21, 2007.
17. "Vascular Factors in Functional MRI", Invited Speaker, Advanced Neuroscience Imaging Research Laboratory Visiting Lecture Series, Department of Radiology, Wake Forest University School of Medicine, September 19, 2007.
18. "Opportunities and Challenges in Functional MRI," Grand Rounds, UCSD Department of Radiology, April 22, 2008.
19. "Functional MRI: Signal interpretation and Calibration," Invited Speaker: 16th ISMRM Education Program: Functional MRI: Methods, interpretation and applications, May 3, 2008, Toronto, Canada
20. "Optimization of Designs for fMRI," Invited Speaker: Mathematics in Brain Imaging Course, Institute for Pure and Applied Mathematics, UCLA, July 21, 2008, Los Angeles, CA
21. "The Physics and Physiology of Functional MRI," Invited Speaker, San Diego State University, September 29, 2008.

22. "Dependence of BOLD fMRI on the Baseline Vascular State," Invited Speaker, National Institutes of Health, October 19, 2008.
23. "The Role of the Baseline Physiological State in Functional MRI," Invited Speaker, Massachusetts Institute of Technology, January 28, 2009.
24. "Functional Imaging in Spine Disorders," Invited Speaker, American Society of Spine Radiology (ASSR) Annual Symposium, Lake Buena Vista, Florida, 18-20 February, 2009.
25. "Quantitative Functional MRI," Invited Speaker, Quantitative Neuroanatomic and Functional Image Assessment Educational Course, 17th ISMRM Scientific Meeting, April 2009, Honolulu, Hawaii.
26. "Experimental Designs for Functional MRI," Invited Speaker, Advanced fMRI Educational Course, Annual meeting of the Organization for Human Brain Mapping, San Francisco, CA, June 23, 2009
27. "fMRI Design Optimization," Invited Speaker, Advanced Neuroimaging Summer Course, University of California, Los Angeles, CA, July 27, 2009
28. "Neurovascular Factors in Functional MRI: The Need for Multimodal Imaging," Invited Speaker, Conference on Inference and Imaging, Institute for Mathematical Behavioral Sciences, University of California, Irvine, November 13-14, 2009
29. "Quantitation in Functional MRI," Invited Speaker, Quantitative MRI Approaches in Clinical Imaging Educational Course ,18th Annual ISMRM scientific Meeting, May 2, 2010, Stockholm, Sweden.
30. "fMRI Design Optimization," Invited Speaker, Advanced Neuroimaging Summer Course, University of California, Los Angeles, CA, July 16, 2010.
31. "Sources of Variability in Resting-State fMRI Measures of Connectivity: A Multimodal Investigation," Invited Speaker, 2nd Biennial Conference on Resting State Connectivity, Milwaukee, Wisconsin, September 17, 2010.
32. "Multimodal Imaging of Resting-State Functional Connectivity," Invited Speaker, Institute for Neural Computation Chalk Talk Series, University of California, San Diego, March 24, 2011.
33. "Multimodal Imaging of the Brain at Rest," Invited Speaker, Methodist Hospital Research Institute Chao Brain Center Seminar Series, Houston, TX, May 23, 2011.
34. "Arterial Spin Labeling: State of the Art and Future Directions," Invited Speaker, 49th Annual Meeting of the American Society of Neuroradiology, Seattle, WA, June 8, 2011.
35. "Neurovascular Factors in fMRI of Aging: Problems and Solutions," Invited Speaker, Symposium on Multi-Modal Mapping of the Aging Brain in Health and Disease, Annual Meeting of the Organization for Human Brain Mapping, Quebec City, Canada, June 29, 2011.
36. "Functional Magnetic Resonance Imaging of the Brain: State of the Art and Future Directions," Invited Speaker, Biosensing and NanoMedicine Educational Session, International Society for Optics, Photonics, and Image Engineering, San Diego, CA, August 21, 2011.
37. "Multimodal Imaging of the Restless Brain," Invited Speaker, Advanced Imaging Research Center Seminar Series, University of Texas Southwestern Medical Center, Dallas, TX, Dec 6, 2011.

38. "Multiscale Magnetic Resonance Imaging of Structure, Function, and Physiology," Invited Speaker, Center for Multiscale Imaging of Living Systems Kickoff Symposium, UC San Diego, Feb 22, 2012.
39. "Multimodal Imaging of the Restless Brain (with a focus on the global signal)," Invited Speaker, Center for Cognitive and Neurobiological Imaging, Stanford University, Stanford, CA, March 22, 2012.
40. "Intepreting the BOLD Signal," Invited Speaker, NSF-sponsored Workshop on Developing Novel Statistical Methods in NeuroImaging, UC San Diego, July 24, 2012.
41. "What is the role of the global signal in resting-state fMRI?," Invited Speaker, Third Biennial Conference on Resting State Brain Connectivity, Magdeburg, Germany, September 6, 2012.
42. "Multimodal Imaging, Resting-State Connectivity, and the Brain's Global Signal," Invited Speaker, Brain Mapping Series, University of California Los Angeles, October 4, 2012.
43. "Resting-State fMRI and the Human Connectome," Invited Speaker, Symposium on Functional NeuroImaging, UC San Diego, October 22, 2012.
44. "Multimodal Imaging of Resting-State Connectivity," Invited Speaker, Translational Neuroscience Group, UC San Diego, December 12, 2012.
45. "Opportunities and Challenges in Functional Neuroimaging," Invited Speaker, Mount Sinai School of Medicine, March 14, 2013.
46. "Negotiation Strategies", Invited Lecturer, National Center for Leadership in Academic Medicine, UCSD, May 10, 2013.
47. "What can we learn from multimodal imaging (fMRI, EEG, MEG) of resting-state brain activity?" Invited Speaker, 2nd Whistler Scientific Workshop on Brain Functional Organization, Connectivity, and Behavior, March 10, 2014.
48. "Negotiation Strategies", Invited Lecturer, National Center for Leadership in Academic Medicine, UCSD, April 10, 2014.
49. "What can we learn from multimodal imaging of resting-state brain activity?" Invited Speaker, ISMRM Global Outreach Workshop, Changsha, China, June 28, 2014.
50. "What can we learn from multimodal imaging of resting-state brain activity?" Invited Speaker, ISMRM-Tsinghua Joint Symposium on Neuroimaging – Emerging Technologies and Novel Applications, Tsinghua University, Beijing, China, June 30, 2014.
51. "Neuroimaging of Resting-State Brain Activity," Invited Speaker, Bioengineering Seminar Series, Pennsylvania State University, September 17, 2014.
52. "Multimodal Imaging of Resting-State Brain Activity," Invited Speaker, 1st Kyoto University – UC San Diego Joint Symposium, Kyoto, Japan, March 11, 2015.
53. "High performance functional MRI with multi-echo simultaneous multi-slice (MESMS) acquisitions," Invited Speaker, Lunch-time symposium, Annual Meeting of the Organization for Human Brain Mapping, Honolulu, Hawaii, June 15, 2015.
54. "Multimodal Imaging of the Restless Brain," Invited Speaker, Department of Cognitive Science, University of California, Irvine, December 4, 2015.
55. "Multimodal Imaging of the Restless Brain: Challenges and Opportunities," Invited Speaker, Department of Electrical Engineering, University of California, Irvine, February 7, 2016.

56. "The Global Signal: Nuisance of Information?" Invited Speaker, Fifth Biennial Conference on Resting-State Connectivity, Vienna, Austria, September 21, 2016.
57. "Imaging the Dynamic Restless Brain" Invited Speaker, CTRI Seminar Series, University of California, San Diego, November 15, 2016.
58. "Nuisance Regression in fMRI: Use, Misuse, and Limitations," Invited Speaker, Center for Advanced MRI, Baylor University School of Medicine, September 5, 2017.
59. "Nuisance Regression in fMRI: Use, Misuse, and Limitations," Distinguished Lecturer, Weldon School of Biomedical Engineering Seminar Series, Purdue University, September 27, 2017.
60. "What Can Neuroimaging Tell Us About the Mindful Brain?", Invited Speaker, Tibetan Medicine Conference on Mind-Body Health, Harvard Medical School, October 6, 2017.
61. "Multimodal Imaging: EEG and fMRI", Invited Speaker, School of Medicine, University of Southern California, November 14, 2017.
62. "Dynamic Functional Connectivity Methods", Educational Session, ISMRM 27th Scientific Meeting, June 21, 2018.

SERVICE

Service to Profession:

Conferences Organized:

North American Siemens Integrated Development Environment For Applications (IDEA) Users Group Meeting, October 10-13, 2002, La Jolla, CA.

Joint Symposium on Functional Neuroimaging, October 22, 2012, La Jolla, CA.

Sessions Chaired:

1. fMRI: Spatial and temporal signal characteristics. Session Co-Moderator. 12th ISMRM Scientific Meeting, Kyoto, Japan, May 18, 2004.
2. Brain Activation. Scientific Discussion Leader. Gordon Research Conference on In Vivo Magnetic Resonance Imaging, July 24, 2006.
3. fMRI: Encoding, Resolution, and Response. Session Co-Moderator. 15th ISMRM Scientific Meeting, Berlin, Germany, May 21, 2007.
4. Perfusion Imaging and Processing, Sunrise Educational Course Moderator. 19th ISMRM Scientific Meeting, Montreal, CA, May 13, 2011.
5. Functional Connectivity: Clinical and Pre-Clinical, Session Co-Moderator, 20th ISMRM Scientific Meeting, Milan, Italy, May 12, 2014.
6. Multimodal Connectivity, Session Moderator, Fifth Biennial Conference on Resting-State Connectivity, Vienna Austria, September 22, 2016.
7. fMRI Signal Characteristics and Analysis, Session Moderator, 27th ISMRM Scientific Meeting, June 20, 2018.

Journal Editor:

2011 - 2018 Editor for Methods and Modeling Section, NeuroImage.

Journal Referee:

1998	IEEE Signal Processing Letters
1999-2005	IEEE Transactions on Signal Processing
2000-Present	NeuroImage
2001	IEEE Transactions on Electron Devices
2001-Present	IEEE Transactions on Medical Imaging
2001-Present	Human Brain Mapping
2003	Journal of Magnetic Resonance
2004	Journal of the Acoustical Society of America
2005	Neuroscience Letters
2005	Vision Research
2005-2007	Journal of Neurophysiology
2005-Present	Magnetic Resonance in Medicine
2006	NMR in Biomedicine

2006-Present	Neurobiology of Aging
2007	Journal of the Royal Society Interface
2007	Molecular Nutrition and Food Research
2007-Present	Biological Psychiatry
2007-Present	Journal of Magnetic Resonance Imaging
2007-Present	Magnetic Resonance Imaging
2009	Journal of Statistical Software
2009	Psychiatry Research: Neuroimaging
2013	Cerebral Cortex
2013-Present	Brain Topography
2014-Present	Brain Connectivity
2014	Nature Communications
2014-Present	PLOS One
2015-Present	Proceedings of the National Academy of Sciences
2015-Present	Journal of Cerebral Blood Flow and Metabolism
2016	eLife

Grant Referee:

2006	Reviewer for Major Research Instrumentation Grant Program, National Science Foundation.
2007	Reviewer for Innovational Research Incentives Scheme, Dutch National Science Foundation.
2007, 2009	Reviewer for Thrasher Research Foundation
2008	Reviewer for NIH Electromagnetics Study Section
2008	Reviewer for Medical Research Council (UK)
2008, 2009, 2010	Reviewer for NSF Cognitive Neuroscience Program
2008-2011	Reviewer for NIH NT Study Section
2009, 2010	Reviewer for NIH BMIT Study Section
2009	Reviewer for NIH Challenge Grant Reviews
2010	Reviewer for NIH In Vivo Imaging and Bioengineering Research Study Section
2011	Reviewer for NIH Quick Trials for Imaging and Image-Guided Interventions Special Emphasis Panel
2011	Reviewer for NIH High End Instrumentation Grant Special Emphasis Panel
2012	Reviewer for NIH Clinical Neuroimmunology and Brain Tumors Study Section
2012	Reviewer for NIH Clinical and Translational Imaging Applications Special Emphasis Panel
2013	Reviewer for European Research Council Frontier Research Grant Program
2013	Reviewer for Swiss National Science Foundation

2013	Reviewer for Action Medical Research
2013	Reviewer for NIH Clinical and Translational Imaging Applications Special Emphasis Panel
2013	Reviewer for NIH P41 Site Review
2014	Reviewer for Israeli Science Foundation
2014	Reviewer for NIH Translational Special Emphasis Panel
2014	Reviewer for NIH Shared Instrumentation Grant Special Emphasis Panel
2015	Reviewer for NIH BMIT Study Section
2015	Reviewer for Swiss National Science Foundation
2015	Reviewer for NIH Translational Special Emphasis Panel
2016	Reviewer for NIH Lifespan Baby Connectome Special Emphasis Panel
2016	Reviewer for German Research Foundation Innovative Research Award Program (Reinhart Koselleck Programme)
2016	Reviewer for NIH High End Instrumentation Grant Special Emphasis Panel
2017	Reviewer for Swiss National Science Foundation
2017	Canada Foundation for Innovation
2017	Reviewer for NIH High End Instrumentation Grant Special Emphasis Panel
2017	Reviewer for NIH Brain Initiative NIBIB Special Emphasis Panel
2017	Reviewer for NIH Clinical and Translational Imaging Special Emphasis Panel
2018	Reviewer for NIH Brain Initiative NIBIB Special Emphasis Panel
2018	Reviewer for Swiss National Science Foundation

Service to University:

2001-2013	Executive Committee, Center for Functional Magnetic Resonance Imaging, University of California San Diego
2006-2010	General Clinical Research Center Advisory Committee, University of California San Diego
2007-2014	Committee Chair, Human Neuroscience Steering Committee, Center for Functional Magnetic Resonance Imaging, University of California San Diego
2007-Present	Member, UCSD Interfaces Graduate Training Program Admissions and Steering Committee
2008-Present	Member, Health Sciences Leadership Development Advisory Board

2010-2013	Member, Clinical and Translational Research Institute Research Committee
2010	Member, Radiology Department Research Faculty Salary Compensation Committee
2010-2013	Committee Chair, 7T Steering Committee Meeting, Center for Functional Magnetic Resonance Imaging
2012	Co-Chair, Organizing Committee, CTRI-CFMRI Joint Symposium on Functional NeuroImaging
2008, 2011, 2014	Member, Radiology Research Residency Selection Committee
2013-2015	Member, UCSD Radiology Research Council
2013-2015	Member, UCSD Research Services Core Advisory Committee
2014-Present	Chair, UCSD Center for Functional MRI Strategic Planning Committee
2014	Committee Chair, Department of Radiology Faculty Search Committee
2014-2015	Member, UCSD Health Sciences Task Force on Faculty Equity
2014-2015	Member, UCSD Health Sciences Physician Onboarding Steering Committee
2014-2015	Council Chair, UCSD Radiology Research Council
2014-2015	Member, UCSD Health Sciences Radiology Chair Search Committee
2014-Present	Panel Member, Lab to Market Program, Rady School of Management, UCSD
2015-Present	Member, Working Group for Joint MS/PhD program in Medical Imaging, Departments of Radiology, Bioengineering, and Electrical Engineering, UCSD
2016	Co-Leader, Transparency Working Group, Department of Radiology, UCSD
2016	Member, UCSD Frontiers of Innovations Scholar Program Proposal Review Committee
2017	Member, Planning Committee for Symposium on Gut-Brain Axis, Kavli Institute for Brain and Mind, UCSD
2018	Member, Advisory Panel, Medical Entrepreneurship Education and Training Program, Rady School of Management, UCSD

Service on External Committees and Boards:

2004-2012	Member, Calibration Working Group, Functional Biomedical Informatics Research Network (FBIRN).
2008-Present	Member, Editorial Board for the journal NeuroImage,
2010	Member, GE Healthcare MR Neuro Medical Advisory Board
2014-2015	Chair-Elect, Brain Function Study Group, International Society for Magnetic Resonance in Medicine

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| 2015-2016 | Chair, Brain Function Study Group, International Society for Magnetic Resonance in Medicine |
| 2016-Present | Member, Joint External Advisory Board, NIH Lifespan Aging and Development Projects |
| 2017-Present | Member, Scientific Advisory Board, Center for Advanced MRI, Baylor University School of Medicine |