

## Justin P. Haldar, Ph.D.

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### ACADEMIC POSITIONS

- **Assistant Professor**, Signal and Image Processing Institute, Ming Hsieh Department of Electrical Engineering, University of Southern California. August 2012–Present.
- **Assistant Professor (Courtesy Appointment)**, Department of Biomedical Engineering, University of Southern California. January 2014–Present.
- **Research Assistant Professor**, Signal and Image Processing Institute, Dana & David Dornsife Cognitive Neuroscience Imaging Center, Brain and Creativity Institute, Ming Hsieh Department of Electrical Engineering, University of Southern California. January 2012–August 2012.
- **Postdoctoral Research Associate**, Signal and Image Processing Institute, Dana & David Dornsife Cognitive Neuroscience Imaging Center, Brain and Creativity Institute, Ming Hsieh Department of Electrical Engineering, University of Southern California. July 2011–December 2011.
- **Graduate Research Assistant/Fellow**, Beckman Institute for Advanced Science and Technology, Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign. Advisor: Professor Zhi-Pei Liang. January 2004–May 2011.

### EDUCATION

- **Doctor of Philosophy in Electrical and Computer Engineering**, May 2011, University of Illinois at Urbana-Champaign. Dissertation: “Constrained Imaging: Denoising and Sparse Sampling.”
- **Master of Science in Electrical Engineering**, August 2005, University of Illinois at Urbana-Champaign. Thesis: “Sparse Matrix Formulations for Fast Image Reconstruction in Multichannel MRI.”
- **Bachelor of Science in Electrical Engineering (Highest Honors)**, May 2004, University of Illinois at Urbana-Champaign. Minors in Computer Science and Mathematics.

### RESEARCH AWARDS AND HONORS – 2005-PRESENT

(Abbreviations: IEEE ISBI – IEEE International Symposium on Biomedical Imaging; IEEE EMBC – IEEE Engineering in Medicine and Biology Conference; ISMRM – International Society for Magnetic Resonance in Medicine; IEEE MIC – IEEE Medical Imaging Conference)

#### Faculty Career Development:

- **National Science Foundation CAREER Award**, 2014.

#### Journal and Conference Paper Awards:

- **First-Place Student Paper Award (co-author)**, IEEE MIC 2012. For the paper: “Kinetic Parameter Estimation in Dynamic PET with a Sparsity-Regularized Mixture Model.”
- **Best Student Paper Award (first author)**, IEEE ISBI 2010. For the paper: “Spatiotemporal Imaging With Partially Separable Functions: A Matrix Recovery Approach.”
- **Student Paper Competition First-Place Award (first author)**, IEEE EMBC 2010. For the paper: “Label-Free High-Resolution Imaging of Live Cells with Deconvolved Spatial Light Interference Microscopy.”
- **I. I. Rabi Young Investigator Award (co-author)**, ISMRM 2009. For the paper: “Robust Water/Fat Separation in the Presence of Large Field Inhomogeneities Using a Graph Cut Algorithm.”
- **Student Paper Competition Geographic Finalist: North America (co-author)**, IEEE EMBC 2008. For the paper: “A Network Flow Method for Improved MR Field Map Estimation in the Presence of Water and Fat.”

- **Student Paper Competition Geographic Finalist: North America (first author)**, IEEE EMBC 2007. For the paper: “High-Resolution Diffusion MRI.”

#### Conference Abstract Awards and Distinctions:

- **Featured Power Pitch Presentation (senior author)**, ISMRM 2017 (hand-selected as one of the most interesting 220 abstracts out of 6,780 submissions to the conference). For the abstract: “Navigator-free EPI ghost correction using low-rank matrix modeling: Theoretical insights and practical improvements.”
- **1st Place Award for Best Abstract Presentation from the ISMRM Quantitative MR Study Group (senior author)**, ISMRM 2017. For the abstract: “Phantom Validation of Diffusion-Relaxation Correlation Spectroscopic Imaging (DR-CSI).”
- **Summa Cum Laude Merit Award (senior author)**, ISMRM 2017. For the abstract: “Navigator-free EPI ghost correction using low-rank matrix modeling: Theoretical insights and practical improvements.”
- **Magna Cum Laude Merit Award (senior author)**, ISMRM 2017. For the abstract: “Faster Diffusion-Relaxation Correlation Spectroscopic Imaging (DR-CSI) using Optimized Experiment Design.”
- **Magna Cum Laude Merit Award (senior author)**, ISMRM 2017. For the abstract: “Wave-LORAKS for faster Wave-CAIPI MRI.”
- **Featured Power Pitch Presentation (first author)**, ISMRM 2016 (hand-selected as one of the most interesting 165 abstracts out of 5,915 submissions to the conference). For the abstract: “Whole-brain quantitative diffusion MRI at 660  $\mu\text{m}$  resolution in 25 minutes using gSlider-SMS and SNR-enhancing joint reconstruction.”
- **Top Ten Most Popular Abstract (senior author)**, ISMRM 2016 (one of the most accessed abstracts out of 5,915 submissions). For the abstract: “Diffusion-Relaxation Correlation Spectroscopic Imaging (DR-CSI): An Enhanced Approach to Imaging Microstructure.” <http://www.ismr.org/2016-annual-meeting-exhibition/most-popular-sessions-abstracts-of-the-2016-meeting/>
- **Magna Cum Laude Merit Award (senior author)**, ISMRM 2016. For the abstract: “SENSE-LORAKS: Phase-Constrained Parallel MRI without Phase Calibration.”
- **Magna Cum Laude Merit Award (senior author)**, ISMRM 2015. For the abstract: “Simultaneous Multi-slice MRI Reconstruction using LORAKS.”
- **Featured PowerPoster Presentation (first author)**, ISMRM 2014 (hand-selected as one of the most interesting 150 abstracts out of 6,481 submissions to the conference). For the abstract: “LORAKS: Low-Rank Modeling of Local k-Space Neighborhoods.”
- **Featured PowerPoster Presentation (senior author)**, ISMRM 2014 (hand-selected as one of the most interesting 150 abstracts out of 6,481 submissions to the conference). For the abstract: “A Novel Approach for Statistical Estimation of HARDI Diffusion Parameters from Rician and Non-Central Chi Magnitude Images.”
- **Magna Cum Laude Merit Award (senior author)**, ISMRM 2014. For the abstract: “P-LORAKS: Low-rank modeling of local k-space neighborhoods with parallel imaging data.”
- **Magna Cum Laude Merit Award (senior author)**, ISMRM 2014. For the abstract: “A Novel Approach for Statistical Estimation of HARDI Diffusion Parameters from Rician and Non-Central Chi Magnitude Images.”
- **Magna Cum Laude Merit Award (senior author)**, ISMRM 2013. For the abstract: “Accelerating Data Acquisition for Reversed-Gradient Distortion Correction in Diffusion MRI: A Constrained Reconstruction Approach.”

#### Graduate School Awards, Fellowships, and Travel Grants:

- **M. E. Van Valkenburg Graduate Research Award**, Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, 2011.
- **Beckman Institute Graduate Fellowship**, University of Illinois at Urbana-Champaign, Fall 2008-Spring 2009.
- **University of Illinois Fellowship**, University of Illinois at Urbana-Champaign, Fall 2008-Spring 2009.
- **National Science Foundation Graduate Research Fellowship**, Summer 2005-Spring 2008.
- **Electrical and Computer Engineering Distinguished Fellowship**, University of Illinois at Urbana-Champaign, Spring 2004-Fall 2005, Fall 2009.
- **Student Travel Grant**, IEEE ISBI, 2007 and 2008.
- **Educational Stipend**, ISMRM, 2005, 2006, and 2007.
- **Graduate College conference travel grant**, University of Illinois at Urbana-Champaign, 2007, 2010.

## REFEREED JOURNAL PUBLICATIONS

(Senior author is underlined; authors who were graduate students at the time the work was performed are marked with a \* if I was their principal research advisor, with a \* if I was a coadvisor of their work, and are otherwise marked with a †. Undergraduate authors who worked under my supervision are marked with a ♣)

- J31. D. Varadarajan\*, **J. P. Haldar**. “A Theoretical Signal Processing Framework for Linear Diffusion MRI: Implications for Parameter Estimation and Experiment Design.” *NeuroImage* 2017. In Press.  
<https://doi.org/10.1016/j.neuroimage.2017.08.048>
- J30. M. Chong\*, C. Bhushan\*, A. A. Joshi, S. Y. Choi†, **J. P. Haldar**, D. W. Shattuck, R. N. Spreng, R. M. Leahy. “Individual Parcellation of Resting fMRI with a Group Functional Connectivity Prior.” *NeuroImage* 156:87–100, 2017.  
<https://doi.org/10.1016/j.neuroimage.2017.04.054>
- J29. D. Kim\*, E. K. Doyle†, J. L. Wisnowski, J. H. Kim, **J. P. Haldar**. “Diffusion-Relaxation Correlation Spectroscopic Imaging (DR-CSI): A Multidimensional Approach for Probing Microstructure.” *Magnetic Resonance in Medicine* 2017. In Press.  
<http://dx.doi.org/10.1002/mrm.26629>
- J28. T. H. Kim\*, K. Setsompop, **J. P. Haldar**. “LORAKS Makes Better SENSE: Phase-Constrained Partial Fourier SENSE Reconstruction without Phase Calibration.” *Magnetic Resonance in Medicine* 77:1021–1035, 2017.  
<http://dx.doi.org/10.1002/mrm.26182>
- J27. C. Bhushan\*, M. Chong\*, S. Choi†, A. A. Joshi, **J. P. Haldar**, H. Damasio, R. M. Leahy. “Temporal Non-Local Means Filtering Reveals Real-Time Whole-Brain Cortical Interactions in Resting fMRI.” *PLOS ONE* 11:e0158504, 2016.  
<http://dx.doi.org/10.1371/journal.pone.0158504>
- J26. D. Kim\*, **J. P. Haldar**. “Greedy Algorithms for Nonnegativity-Constrained Simultaneous Sparse Recovery.” *Signal Processing* 125:274–289, 2016.  
<http://dx.doi.org/10.1016/j.sigpro.2016.01.021>
- J25. **J. P. Haldar**, J. Zhuo♣. “P-LORAKS: Low-Rank Modeling of Local k-Space Neighborhoods with Parallel Imaging Data.” *Magnetic Resonance in Medicine* 75:1499–1514, 2016.  
<http://dx.doi.org/10.1002/mrm.25717>
- J24. J. H. Kim, S.-K. Song, **J. P. Haldar**. “SNR-Enhancing Joint Reconstruction for Improved Diffusion Imaging of Mouse Spinal Cord White Matter Injury.” *Magnetic Resonance in Medicine* 75:852–858, 2016.  
<http://dx.doi.org/10.1002/mrm.25691>
- J23. D. Varadarajan\*, **J. P. Haldar**. “A Majorize-Minimize Framework for Rician and Non-Central Chi MR Images.” *IEEE Transactions on Medical Imaging* 34:2191–2202, 2015.  
<http://dx.doi.org/10.1109/TMI.2015.2427157>
- J22. C. Bhushan\*, **J. P. Haldar**, S. Choi, A. A. Joshi, D. W. Shattuck, R. M. Leahy. “Co-registration and distortion correction of diffusion and anatomical images based on inverse contrast normalization.” *NeuroImage* 115:269–280, 2015.  
<http://dx.doi.org/10.1016/j.neuroimage.2015.03.050>
- J21. A. Habibi, B. Ilari, K. Crimi†, M. Metke, J. T. Kaplan, A. A. Joshi, R. M. Leahy, D. W. Shattuck, S. Y. Choi, **J. Haldar**, B. Ficek†, A. Damasio, H. Damasio. “An equal start: Absence of cognitive and neural markers for musical aptitude prior to training in children.” *Frontiers in Human Neuroscience* 8:690, 2014.  
<http://dx.doi.org/10.3389/fnhum.2014.00690>
- J20. **J. P. Haldar**. “Low-Rank Modeling of Local k-Space Neighborhoods (LORAKS) for Constrained MRI.” *IEEE Transactions on Medical Imaging* 33:668–681, 2014.  
<http://dx.doi.org/10.1109/TMI.2013.2293974>
- J19. C. Bhushan\*, A. A. Joshi, R. M. Leahy, **J. P. Haldar**. “Improved B<sub>0</sub>-distortion correction in diffusion MRI using interleaved q-space sampling and constrained reconstruction.” *Magnetic Resonance in Medicine* 72:1218–1232, 2014.  
<http://dx.doi.org/10.1002/mrm.25026>
- J18. Y. Lin\*, **J. P. Haldar**, Q. Li, P. Conti, R. M. Leahy. “Constrained Mixture Modeling for the Estimation of Kinetic Parameters in Dynamic PET.” *IEEE Transactions on Medical Imaging* 33:173–185, 2014.  
<http://dx.doi.org/10.1109/TMI.2013.2283229>
- J17. F. Lam†, S. D. Babacan, **J. P. Haldar**, M. W. Weiner, N. Schuff, Z.-P. Liang. “Denoising Diffusion-Weighted Magnitude MR Images using Rank and Edge Constraints.” *Magnetic Resonance in Medicine* 71:1272–1284, 2014.  
<http://dx.doi.org/10.1002/mrm.24728>
- J16. S. Ashrafulla\*, **J. P. Haldar**, A. A. Joshi, R. M. Leahy. “Canonical Granger Causality Between Regions of Interest.” *NeuroImage* 83:189–199, 2013.  
<http://dx.doi.org/10.1016/j.neuroimage.2013.06.056>

- J15. **J. P. Haldar**, R. M. Leahy. “Linear Transforms for Fourier Data on the Sphere: Application to High Angular Resolution Diffusion MRI of the Brain.” *NeuroImage* 71:233–247, 2013.  
<http://dx.doi.org/10.1016/j.neuroimage.2013.01.022>
- J14. J. Gai, N. Obeid†, J. L. Holtrop†, X.-L. Wu†, F. Lam†, M. Fu†, **J. P. Haldar**, W.-m. W. Hwu, Z.-P. Liang, B. P. Sutton. “More IMPATIENT: A Gridding-Accelerated Toeplitz-Based Strategy for Non-Cartesian High-Resolution 3D MRI on GPUs.” *Journal of Parallel and Distributed Computing* 73:686–697, 2013.  
<http://dx.doi.org/10.1016/j.jpdc.2013.01.001>
- J13. **J. P. Haldar**†, V. J. Wedeen, M. Nezamzadeh, G. Dai, M. W. Weiner, N. Schuff, Z.-P. Liang. “Improved Diffusion Imaging through SNR-Enhancing Joint Reconstruction.” *Magnetic Resonance in Medicine* 69:277–289, 2013.  
<http://dx.doi.org/10.1002/mrm.24229>
- J12. B. Zhao†, **J. P. Haldar**†, A. G. Christodoulou†, Z.-P. Liang. “Image Reconstruction from Highly Undersampled ( $k, t$ )-Space Data with Joint Partial Separability and Sparsity Constraints.” *IEEE Transactions on Medical Imaging* 31:1809–1820, 2012.  
<http://dx.doi.org/10.1109/TMI.2012.2203921>
- J11. Y. Wang, Q. Wang†, **J. P. Haldar**†, F.-C. Yeh†, M. Xie, P. Sun, K. Trinkaus, R. S. Klein, A. H. Cross, S.-K. Song. “Quantification of increased cellularity during inflammatory demyelination.” *Brain* 134:3587–3598, 2011.  
<http://dx.doi.org/10.1093/brain/awr307>
- J10. **J. P. Haldar**†, Z. Wang†, G. Popescu, Z.-P. Liang. “Deconvolved Spatial Light Interference Microscopy for Live Cell Imaging.” *IEEE Transactions on Biomedical Engineering* 58:2489–2497, 2011.  
<http://dx.doi.org/10.1109/TBME.2011.2158003>
- J9. D. Hernando†, D. C. Karampinos†, K. F. King, **J. P. Haldar**†, S. Majumdar, J. G. Georgiadis, Z.-P. Liang. “Removal of Olefinic Fat Chemical Shift Artifact in Diffusion MRI.” *Magnetic Resonance in Medicine* 65:692–701, 2011.  
<http://dx.doi.org/10.1002/mrm.22670>
- J8. **J. P. Haldar**†, D. Hernando†, Z.-P. Liang. “Compressed-Sensing MRI with Random Encoding.” *IEEE Transactions on Medical Imaging* 30:893–903, 2011.  
<http://dx.doi.org/10.1109/TMI.2010.2085084>
- J7. R. John, R. Rezaeipoor, S. G. Adie, E. J. Chaney, A. L. Oldenburg, M. Marjanovic, **J. P. Haldar**†, B. Sutton, S. A. Boppart. “In vivo magnetomotive optical molecular imaging using targeted magnetic nanoprobes.” *Proceedings of the National Academy of Sciences of the United States of America* 107:8085–8090, 2010.  
<http://dx.doi.org/10.1073/pnas.0913679107>
- J6. D. Hernando†, P. Kellman, **J. P. Haldar**†, Z.-P. Liang. “Robust water/fat separation in the presence of large field inhomogeneities using a graph cut algorithm.” *Magnetic Resonance in Medicine* 63:79–90, 2010.  
<http://dx.doi.org/10.1002/mrm.22177>  
 Recipient of the 2009 ISMRM I. I. Rabi Young Investigator Award.
- J5. **J. P. Haldar**†, D. Hernando†. “Rank-Constrained Solutions to Linear Matrix Equations using PowerFactorization.” *IEEE Signal Processing Letters* 16:584–587, 2009.  
<http://dx.doi.org/10.1109/LSP.2009.2018223>
- J4. J. H. Kim, **J. Haldar**†, Z.-P. Liang, S.-K. Song. “Diffusion Tensor Imaging of Mouse Brain Stem and Cervical Spinal Cord.” *Journal of Neuroscience Methods* 176:186–191, 2009.  
<http://dx.doi.org/10.1016/j.jneumeth.2008.09.005>
- J3. S. S. Stone†, **J. P. Haldar**†, S. C. Tsao†, W.-m. W. Hwu, B. P. Sutton, Z.-P. Liang. “Accelerating Advanced MRI Reconstructions on GPUs.” *Journal of Parallel and Distributed Computing* 68:1307–1318, 2008.  
<http://dx.doi.org/10.1016/j.jpdc.2008.05.013>
- J2. **J. P. Haldar**†, D. Hernando†, S.-K. Song, Z.-P. Liang. “Anatomically Constrained Reconstruction from Noisy Data.” *Magnetic Resonance in Medicine* 59:810–818, 2008.  
<http://dx.doi.org/10.1002/mrm.21536>
- J1. D. Hernando†, **J. P. Haldar**†, B. P. Sutton, J. Ma, P. Kellman, Z.-P. Liang. “Joint estimation of water/fat images and field inhomogeneity map.” *Magnetic Resonance in Medicine* 59:571–580, 2008.  
<http://dx.doi.org/10.1002/mrm.21522>

## TECHNICAL REPORT (UNREFEREED)

(Senior author is underlined; authors who were graduate students at the time the work was performed are marked with a \* if I was their principal research advisor, with a \* if I was a coadvisor of their work, and are otherwise marked with a †. Undergraduate authors who worked under my supervision are marked with a ♣)

- **J. P. Haldar**. “Low-Rank Modeling of Local k-Space Neighborhoods (LORAKS): Implementation and Examples for Reproducible Research.” University of Southern California, Los Angeles, CA, Technical Report USC-SIPI-414, April 2014.  
<http://sipi.usc.edu/reports/abstracts.php?rid=sipi-414>

## REFEREED BOOK CHAPTER

(Senior author is underlined; authors who were graduate students at the time the work was performed are marked with a \* if I was their principal research advisor, with a ★ if I was a coadvisor of their work, and are otherwise marked with a †. Undergraduate authors who worked under my supervision are marked with a ♣)

- Y. Zhuo<sup>†</sup>, X.-L. Wu<sup>†</sup>, **J. P. Haldar**<sup>†</sup>, T. Marin<sup>†</sup>, W.-m. Hwu, Z.-P. Liang, B. P. Sutton. “Using GPUs to Accelerate Advanced MRI Reconstruction with Field Inhomogeneity Compensation.” In *GPU Computing Gems Emerald Edition*, W.-m. W. Hwu Ed., Elsevier Inc., 2011, pp. 709–722.  
<http://dx.doi.org/10.1016/B978-0-12-384988-5.00044-9>

## REFEREED CONFERENCE PROCEEDINGS

(Senior author is underlined; authors who were graduate students at the time the work was performed are marked with a \* if I was their principal research advisor, with a ★ if I was a coadvisor of their work, and are otherwise marked with a †. Undergraduate authors who worked under my supervision are marked with a ♣)

- C126. B. Kim,<sup>†</sup> D. B. Kay,<sup>†</sup> N. Schweighofer, **J. P. Haldar**, R. M. Leahy, S. Choi,<sup>†</sup> B. Fisher, C. J. Winstein. “Quantification of corticospinal tract using DTI in chronic stroke survivors.” *Society for Neuroscience 47th Annual Meeting*, Washington, DC, 2017. (Abstract)
- C125. D. Kim,\* **J. P. Haldar**. “Improved Efficiency for Microstructure Imaging using High-Dimensional MR Correlation Spectroscopic Imaging.” *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, 2017. Accepted.  
[Invited Presentation.](#)
- C124. **J. P. Haldar**. “Computational imaging with LORAKS: Reconstructing linearly predictable signals using low-rank matrix regularization.” *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, 2017. Accepted.  
[Invited Presentation.](#)
- C123. D. Kim,\* J. L. Wisnowski, **J. P. Haldar**. “MR Correlation Spectroscopic Imaging of Multidimensional Exponential Decays: Probing Microstructure with Diffusion and Relaxation.” *Wavelets and Sparsity XVII, Proceedings of SPIE 10394*, San Diego, 2017, p. 103940D.  
<http://dx.doi.org/10.1117/12.2272833>  
[Invited Presentation.](#)
- C122. D. Varadarajan,\* **J. Haldar**. “Theoretical characterization of angular resolution for linear ODF estimation.” *23rd Annual Meeting of the Organization for Human Brain Mapping*, Vancouver, 2017, p. 1747. (Abstract)  
<https://ww5.aievolution.com/hbm1701/index.cfm?do=abs.viewAbs&abs=2715>
- C121. **J. P. Haldar**, D. Kim.\* “OEDIPUS: Towards optimal deterministic k-space sampling for sparsity-constrained MRI.” *International Society for Magnetic Resonance in Medicine 25th Annual Meeting*, Honolulu, 2017, p. 3877. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2017/PDFfiles/3877.html>
- C120. **J. P. Haldar**, K. Setsompop. “Fast high-resolution diffusion MRI using gSlider-SMS, interlaced subsampling, and SNR-enhancing joint reconstruction.” *International Society for Magnetic Resonance in Medicine 25th Annual Meeting*, Honolulu, 2017, p. 175. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2017/PDFfiles/0175.html>
- C119. D. Kim,\* **J. P. Haldar**. “Faster Diffusion-Relaxation Correlation Spectroscopic Imaging (DR-CSI) using Optimized Experiment Design.” *International Society for Magnetic Resonance in Medicine 25th Annual Meeting*, Honolulu, 2017, p. 176. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2017/PDFfiles/0176.html>  
[Recipient of a Magna Cum Laude ISMRM Merit Award.](#)
- C118. D. Kim,\* E. K. Doyle,<sup>†</sup> J. L. Wisnowski, **J. P. Haldar**. “Phantom Validation of Diffusion-Relaxation Correlation Spectroscopic Imaging (DR-CSI) using Optimized Experiment Design.” *International Society for Magnetic Resonance in Medicine 25th Annual Meeting*, Honolulu, 2017, p. 609. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2017/PDFfiles/0176.html>  
[Recipient of the 1st Place Award for Best Abstract Presentation from the ISMRM Quantitative MR Study Group.](#)

- C117. T. H. Kim,\* B. Bilgic, D. Polak, K. Setsompop, **J. P. Haldar**. “Wave-LORAKS for Faster Wave-CAIPI MRI.” *International Society for Magnetic Resonance in Medicine 25th Annual Meeting*, Honolulu, 2017, p. 1037. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2017/PDFfiles/1037.html>  
 Recipient of a Magna Cum Laude ISMRM Merit Award.
- C116. R. A. Lobos,\* T. H. Kim,\* W. S. Hoge, **J. P. Haldar**. “Navigator-free EPI ghost correction using low-rank matrix modeling: Theoretical insights and practical improvements.” *International Society for Magnetic Resonance in Medicine 25th Annual Meeting*, Honolulu, 2017, p. 449. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2017/PDFfiles/0449.html>  
 Featured with a Power Pitch presentation (Hand-selected as one of the 220 most interesting abstracts out of 6,780 submissions to the conference).  
 Recipient of a Summa Cum Laude ISMRM Merit Award.
- C115. Y. Bliesener,<sup>†</sup> S. G. Lingala, **J. P. Haldar**, K. S. Nayak. “Comparison of (k,t) sampling schemes for DCE MRI pharmacokinetic parameter estimation.” *International Society for Magnetic Resonance in Medicine 25th Annual Meeting*, Honolulu, 2017, p. 1909. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2017/PDFfiles/1909.html>
- C114. B. Kim,<sup>†</sup> D. B. Kay,<sup>†</sup> N. Schweighofer, **J. P. Haldar**, R. M. Leahy, B. Fisher, C. J. Winstein. “Changes in corticospinal tract microstructure are associated with motor performance improvement in chronic stroke.” *Society for Neuroscience 46th Annual Meeting*, San Diego, 2016, p. 520. (Abstract)  
<https://www.sfn.org/Annual-Meeting/Neuroscience-2016/Sessions-and-Events/Program/Abstract-PDFs-2016>
- C113. B. Zhao, **J. P. Haldar**, K. Setsompop, L. L. Wald. “Optimal Experiment Design for Magnetic Resonance Fingerprinting.” *38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Orlando, 2016, pp. 453-456.  
<https://doi.org/10.1109/EMBC.2016.7590737>
- C112. M. Chong\*, C. Bhushan\*, A. Joshi, **J. Haldar**, R. N. Spreng, R. Leahy. “Individual Performance of Resting fMRI Parcellation with Group Connectivity Priors.” *22nd Annual Meeting of the Organization for Human Brain Mapping*, Geneva, 2016, p. 2214. (Abstract)
- C111. C. Bhushan\*, M. Chong\*, S. Choi<sup>†</sup>, A. Joshi, **J. Haldar**, H. Damasio, R. Leahy. “Non-local means filtering for cortical parcellation of resting fMRI.” *22nd Annual Meeting of the Organization for Human Brain Mapping*, Geneva, 2016, p. 2194. (Abstract)
- C110. **J. P. Haldar**, Q. Fan, K. Setsompop. “Whole-brain quantitative diffusion MRI at 660  $\mu\text{m}$  resolution in 25 minutes using gSlider-SMS and SNR-enhancing joint reconstruction.” *International Society for Magnetic Resonance in Medicine 24th Annual Meeting*, Singapore, 2016, p. 102. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2016/PDFfiles/0102.html>  
 Featured with a Power Pitch presentation (Hand-selected as one of the 165 most interesting abstracts out of 5,915 submissions to the conference).
- C109. D. Kim\*, J. H. Kim, **J. P. Haldar**. “Diffusion-Relaxation Correlation Spectroscopic Imaging (DR-CSI): An Enhanced Approach to Imaging Microstructure.” *International Society for Magnetic Resonance in Medicine 24th Annual Meeting*, Singapore, 2016, p. 660. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2016/PDFfiles/0660.html>  
 One of the top ten most popular abstracts of the meeting (out of 5,915 submissions). <http://www.ismrm.org/2016-annual-meeting-exhibition/most-popular-sessions-abstracts-of-the-2016-meeting/>
- C108. T. H. Kim\*, K. Setsompop, **J. P. Haldar**. “SENSE-LORAKS: Phase-Constrained Parallel MRI without Phase Calibration.” *International Society for Magnetic Resonance in Medicine 24th Annual Meeting*, Singapore, 2016, p. 1089. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2016/PDFfiles/1089.html>  
 Recipient of a Magna Cum Laude ISMRM Merit Award.
- C107. D. Varadarajan\*, **J. P. Haldar**. “A Theoretical Framework for Sampling and Reconstructing Ensemble Average Propagators in Diffusion MRI.” *International Society for Magnetic Resonance in Medicine 24th Annual Meeting*, Singapore, 2016, p. 2049. (Abstract)  
<http://indexsmart.mirasmart.com/ISMRM2016/PDFfiles/2049.html>
- C106. B. Zhao, **J. P. Haldar**, K. Setsompop, L. L. Wald. “Towards Optimized Experiment Design for Magnetic Resonance Fingerprinting.” *International Society for Magnetic Resonance in Medicine 24th Annual Meeting*, Singapore, 2016, p. 2835. (Abstract)  
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- C37. **J. P. Haldar**<sup>†</sup>, Q. Gao<sup>†</sup>, X. J. Zhou, Z.-P. Liang. “Optimized Measurement of Anomalous Diffusion.” *International Society for Magnetic Resonance in Medicine 17th Scientific Meeting*, Honolulu, 2009, p. 3570. (Abstract)  
<http://cds.ismrm.org/protected/09MProceedings/files/00459.pdf>
- C36. D. Hernando<sup>†</sup>, P. Kellman, **J. Haldar**<sup>†</sup>, Z.-P. Liang. “Robust Water/Fat Separation in the Presence of Large Field Inhomogeneities Using a Graph Cut Algorithm.” *International Society for Magnetic Resonance in Medicine 17th Scientific Meeting*, Honolulu, 2009, p. 459. (Abstract)  
<http://cds.ismrm.org/protected/09MProceedings/files/00459.pdf>  
 Winner of the I. I. Rabi Young Investigator Award.
- C35. D. Hernando<sup>†</sup>, D. C. Karampinos<sup>†</sup>, K. F. King, **J. Haldar**<sup>†</sup>, J. G. Georgiadis, Z.-P. Liang. “Removal of Olefinic Fat Signal in Body Diffusion-Weighted EPI Using a Dixon Method.” *International Society for Magnetic Resonance in Medicine 17th Scientific Meeting*, Honolulu, 2009, p. 2064. (Abstract)  
<http://cds.ismrm.org/protected/09MProceedings/files/02064.pdf>
- C34. Q. Gao<sup>†</sup>, **J. P. Haldar**<sup>†</sup>, N. Rangwala<sup>†</sup>, R. L. Magin, Z.-P. Liang, X. J. Zhou. “Analysis of High b-Value Diffusion Images Using a Fractional Order Diffusion Model with Denoising Image Reconstruction.” *International Society for Magnetic Resonance in Medicine 17th Scientific Meeting*, Honolulu, 2009, p. 1418. (Abstract)  
<http://cds.ismrm.org/protected/09MProceedings/files/01418.pdf>
- C33. **J. P. Haldar**<sup>†</sup>, T.-H. Wu, Q. Wang<sup>†</sup>, C.-I. Chen, S.-K. Song, Z.-P. Liang. “Further Development in Anatomically Constrained MR Image Reconstruction: Application to Multimodal Imaging of Mouse Stroke.” *30th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Vancouver, 2008, pp. 422-425.  
<http://dx.doi.org/10.1109/IEMBS.2008.4649180>

- C32. D. Hernando<sup>†</sup>, P. Kellman, **J. P. Haldar<sup>†</sup>**, Z.-P. Liang. “A Network Flow Method for Improved MR Field Map Estimation in the Presence of Water and Fat.” *30th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Vancouver, 2008, pp. 82-85.  
<http://dx.doi.org/10.1109/IEMBS.2008.4649096>  
[Student Paper Competition Geographic Finalist: North America.](#)
- C31. I. C. Atkinson, A. Lu, **J. P. Haldar<sup>†</sup>**, Z.-P. Liang, K. R. Thulborn. “Human 17-Oxygen Imaging at 9.4T and Enhanced Reconstruction using 23-Sodium.” *American Society of Neuroradiology 46th Annual Meeting*, New Orleans, 2008, p. 214. (Abstract)
- C30. **J. P. Haldar<sup>†</sup>**, Z.-P. Liang. “Joint Reconstruction of Noisy High-Resolution MR Image Sequences.” *IEEE International Symposium on Biomedical Imaging: From Nano to Macro*, Paris, 2008, pp. 752-755.  
<http://dx.doi.org/10.1109/ISBI.2008.4541105>
- C29. S. S. Stone<sup>†</sup>, **J. P. Haldar<sup>†</sup>**, S. C. Tsao<sup>†</sup>, W.-M. W. Hwu, Z.-P. Liang, B. P. Sutton. “Accelerating Advanced MRI Reconstructions on GPUs.” *ACM International Conference on Computing Frontiers*, Ischia, 2008, pp. 261-272.  
<http://doi.acm.org/10.1145/1366230.1366276>
- C28. **J. P. Haldar<sup>†</sup>**, V. J. Wedeen, M. Nezamzadeh, G. Dai, N. Schuff, Z.-P. Liang. “Improved SNR in Diffusion Spectrum Imaging with Statistical Reconstruction.” *International Society for Magnetic Resonance in Medicine 16th Scientific Meeting*, Toronto, 2008, p. 141. (Abstract)  
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- C27. **J. P. Haldar<sup>†</sup>**, D. Hernando<sup>†</sup>, D. C. Karampinos<sup>†</sup>, B. P. Sutton, J. G. Georgiadis, Z.-P. Liang. “Sensitivity Encoding of Chemical Shifts.” *International Society for Magnetic Resonance in Medicine 16th Scientific Meeting*, Toronto, 2008, p. 1283. (Abstract)  
<http://cds.ismrm.org/ismrm-2008/files/01283.pdf>
- C26. **J. P. Haldar<sup>†</sup>**, S. S. Stone<sup>†</sup>, H. Yi<sup>†</sup>, S. C. Tsao<sup>†</sup>, B. P. Sutton, W.-M. W. Hwu, Z.-P. Liang. “Fast MR Image Reconstruction using Graphics Processing Units.” *International Society for Magnetic Resonance in Medicine 16th Scientific Meeting*, Toronto, 2008, p. 1493. (Abstract)  
<http://cds.ismrm.org/ismrm-2008/files/01493.pdf>
- C25. I. C. Atkinson, K. R. Thulborn, A. Lu, **J. Haldar<sup>†</sup>**, X. J. Zhou, T. Claiborne, Z.-P. Liang. “Quantitative 23-Sodium and 17-Oxygen MR Imaging in Human Brain at 9.4 Tesla Enhanced by Constrained k-Space Reconstruction.” *International Society for Magnetic Resonance in Medicine 16th Scientific Meeting*, Toronto, 2008, p. 335. (Abstract)  
<http://cds.ismrm.org/ismrm-2008/files/00335.pdf>
- C24. D. Hernando<sup>†</sup>, **J. Haldar<sup>†</sup>**, L. Ying, K. King, D. Xu, Z.-P. Liang. “Interventional MRI with sparse sampling: an application of compressed sensing.” *International Society for Magnetic Resonance in Medicine 16th Scientific Meeting*, Toronto, 2008, p. 1482. (Abstract)  
<http://cds.ismrm.org/ismrm-2008/files/01482.pdf>
- C23. D. Hernando<sup>†</sup>, P. Kellman, **J. Haldar<sup>†</sup>**, Z.-P. Liang. “Estimation of water/fat images, B0 field map and T2\* map using VARPRO.” *International Society for Magnetic Resonance in Medicine 16th Scientific Meeting*, Toronto, 2008, p. 1517. (Abstract)  
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- C22. D. Hernando<sup>†</sup>, P. Kellman, **J. Haldar<sup>†</sup>**, Z.-P. Liang. “Improved field map estimation in the presence of multiple spectral components.” *International Society for Magnetic Resonance in Medicine 16th Scientific Meeting*, Toronto, 2008, p.3054. (Abstract)  
<http://cds.ismrm.org/ismrm-2008/files/03054.pdf>
- C21. J. H. Kim, **J. Haldar<sup>†</sup>**, Z.-P. Liang, S.-K. Song. “Actively Decoupled Two Coil System Enables in Vivo DTI of Mouse Cervical Spinal Cord at 4.7 T.” *International Society for Magnetic Resonance in Medicine 16th Scientific Meeting*, Toronto, 2008, p. 2304. (Abstract)  
<http://cds.ismrm.org/ismrm-2008/files/02304.pdf>
- C20. K. R. Thulborn, I. C. Atkinson, A. Lu, T. Claiborne, M. P. Flannery, X. J. Zhou, **J. Haldar<sup>†</sup>**, Z.-P. Liang. “Metabolic MR Imaging of Human Brains at 9.4 Tesla.” *6th Bi-Annual Minnesota Workshops on High Field MR Imaging and Spectroscopy and MR Imaging of Brain Function*, Minneapolis, 2007. (Abstract)
- C19. S. S. Stone<sup>†</sup>, H. Yi<sup>†</sup>, **J. P. Haldar<sup>†</sup>**, W.-M. W. Hwu, B. P. Sutton, Z.-P. Liang. “How GPUs Can Improve the Quality of Magnetic Resonance Imaging.” *The First Workshop on General Purpose Processing on Graphics Processing Units*, Boston, 2007.  
<http://impact.crhc.illinois.edu/shared/workshop/Stone.MRI.GPGPU.Paper.pdf>

- C18. C. L. Shaffer<sup>†</sup>, D. Hernando<sup>†</sup>, J. Stastny<sup>†</sup>, S. Kalyanam, **J. Haldar<sup>†</sup>**, E. Chaney, X. Liang<sup>†</sup>, M. F. Insana. “Multimodality Imaging Development Using 3D Gel Cultures.” *Biomedical Engineering Society Annual Fall Meeting*, Los Angeles, 2007, p. 374. (Abstract)
- C17. **J. P. Haldar<sup>†</sup>**, Z.-P. Liang. “High-Resolution Diffusion MRI.” *29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Lyon, 2007, pp. 311–314.  
<http://dx.doi.org/10.1109/IEMBS.2007.4352286>  
 Student Paper Competition Geographic Finalist: North America.
- C16. **J. P. Haldar<sup>†</sup>**, D. Hernando<sup>†</sup>, M. D. Budde<sup>†</sup>, Q. Wang<sup>†</sup>, S.-K. Song, Z.-P. Liang. “High-Resolution MR Metabolic Imaging.” *29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Lyon, 2007, pp. 4324–4326.  
<http://dx.doi.org/10.1109/IEMBS.2007.4353293>  
 Invited Presentation.
- C15. **J. P. Haldar<sup>†</sup>**, J. Anderson<sup>†</sup>, S.-W. Sun. “Maximum Likelihood Estimation of T1 Relaxation Parameters Using VARPRO.” *Joint Annual Meeting ISMRM-ESMRMB*, Berlin, 2007, p. 41. (Abstract)  
<http://cds.ismrm.org/ismrm-2007/files/00041.pdf>
- C14. **J. P. Haldar<sup>†</sup>**, D. Hernando<sup>†</sup>, B. P. Sutton, Z.-P. Liang. “Data Acquisition Considerations for Compressed Sensing in MRI.” *Joint Annual Meeting ISMRM-ESMRMB*, Berlin, 2007, p. 829. (Abstract)  
<http://cds.ismrm.org/ismrm-2007/files/00829.pdf>
- C13. **J. P. Haldar<sup>†</sup>**, D. Hernando<sup>†</sup>, M. D. Budde<sup>†</sup>, Q. Wang<sup>†</sup>, S.-K. Song, Z.-P. Liang. “High-Resolution Spectroscopic Imaging with Statistical Reconstruction.” *Joint Annual Meeting ISMRM-ESMRMB*, Berlin, 2007, p. 1231. (Abstract)  
<http://cds.ismrm.org/ismrm-2007/files/01231.pdf>
- C12. **J. P. Haldar<sup>†</sup>**, D. Hernando<sup>†</sup>, Z.-P. Liang. “Estimation of Compartmental Signals from Limited Fourier Samples.” *Joint Annual Meeting ISMRM-ESMRMB*, Berlin, 2007, p. 1910. (Abstract)  
<http://cds.ismrm.org/ismrm-2007/files/01910.pdf>
- C11. D. Hernando<sup>†</sup>, **J. Haldar<sup>†</sup>**, B. Sutton, Z.-P. Liang. “Removal of Lipid Nuisance Signals in MRSI Using Spatial-Spectral Constraints.” *Joint Annual Meeting ISMRM-ESMRMB*, Berlin, 2007, p. 1244. (Abstract)  
<http://cds.ismrm.org/ismrm-2007/files/01244.pdf>
- C10. D. Hernando<sup>†</sup>, **J. Haldar<sup>†</sup>**, J. Ma, Z.-P. Liang. “A Linear Prediction Approach to Joint Estimation of Water/Fat Images and Field Inhomogeneity Map.” *Joint Annual Meeting ISMRM-ESMRMB*, Berlin, 2007, p. 1629. (Abstract)  
<http://cds.ismrm.org/ismrm-2007/files/01629.pdf>
- C9. **J. P. Haldar<sup>†</sup>**, D. Hernando<sup>†</sup>, Z.-P. Liang. “Shaping Spatial Response Functions for Optimal Estimation of Compartmental Signals from Limited Fourier Data.” *IEEE International Symposium on Biomedical Imaging: From Nano to Macro*, Arlington, 2007, pp. 1364–1367.  
<http://dx.doi.org/10.1109/ISBI.2007.357114>
- C8. D. Hernando<sup>†</sup>, **J. Haldar<sup>†</sup>**, B. Sutton, Z.-P. Liang. “Removal of Lipid Signal in MRSI Using Spatial-Spectral Constraints.” *IEEE International Symposium on Biomedical Imaging: From Nano to Macro*, Arlington, 2007, pp. 1360–1363.  
<http://dx.doi.org/10.1109/ISBI.2007.357113>
- C7. **J. P. Haldar<sup>†</sup>**, M. Jacob, A. Ebel, X. Zhu, N. Schuff, D. Hernando<sup>†</sup>, B. Sutton, Z.-P. Liang. “Constrained Spectroscopic Imaging with Hard and Soft Anatomical Boundary Constraints.” *International Society for Magnetic Resonance in Medicine 14th Scientific Meeting*, Seattle, 2006, p. 3077. (Abstract)  
<http://cds.ismrm.org/ismrm-2006/files/03077.pdf>
- C6. M. Jacob, B. P. Sutton, **J. Haldar<sup>†</sup>**, Z.-P. Liang. “Improved spectroscopic imaging using echo-planar scans and sparse reconstruction.” *International Society for Magnetic Resonance in Medicine 14th Scientific Meeting*, Seattle, 2006, p. 2964. (Abstract)  
<http://cds.ismrm.org/ismrm-2006/files/02964.pdf>
- C5. **J. P. Haldar<sup>†</sup>**, M. Jacob, A. Ebel, X. Zhu, N. Schuff, D. Hernando<sup>†</sup>, B. Sutton, Z.-P. Liang. “Regularized Inversion of Noisy, Incomplete MR Spectroscopic Imaging Data with Anatomical Prior.” *IEEE International Symposium on Biomedical Imaging: From Nano to Macro*, Arlington, 2006, pp. 718–721.  
<http://dx.doi.org/10.1109/ISBI.2006.1625017>
- C4. D. Hernando<sup>†</sup>, **J. Haldar<sup>†</sup>**, Z.-P. Liang. “Reduced-Encoding MRI Using Higher-Order Generalized Series.” *IEEE International Symposium on Biomedical Imaging: From Nano to Macro*, Arlington, 2006, pp. 29–32.  
<http://dx.doi.org/10.1109/ISBI.2006.1624844>
- C3. M. Jacob, B. Sutton, **J. Haldar<sup>†</sup>**, Z.-P. Liang. “On Model-Based MR Spectroscopic Imaging.” *IEEE International Symposium on Biomedical Imaging: From Nano to Macro*, Arlington, 2006, pp. 726–729.  
<http://dx.doi.org/10.1109/ISBI.2006.1625019>

- C2. L. Ying, **J. Haldar**<sup>†</sup>, Z.-P. Liang. “An Efficient Non-Iterative Reconstruction Algorithm for Parallel MRI with Arbitrary K-Space Trajectories.” *27th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Shanghai, 2005, pp. 1344–1347.  
<http://dx.doi.org/10.1109/IEMBS.2005.1616676>
- C1. **J. P. Haldar**<sup>†</sup>, L. Ying, Z.-P. Liang. “Lattice Sampling of k-Space for Parallel Imaging.” *International Society for Magnetic Resonance in Medicine 13th Scientific Meeting*, Miami, 2005, p. 2420. (Abstract)  
<http://cds.ismrm.org/ismrm-2005/Files/02420.pdf>

## PATENTS

- **J. P. Haldar**, R. M. Leahy. “Linear Transform Approach for Processing Diffusion Magnetic Resonance Imaging Data.” Provisional US patent 61/596,643, provisional US patent 61/757,619, US patent application number 14/166,712.
- B. Zhao, **J. P. Haldar**, L. L. Wald. “Systems and Methods for Designing Magnetic Resonance Fingerprinting Imaging Parameters.” Provisional US patent 62/308,172, US patent application number 15/450,127.

## ACTIVE RESEARCH SUPPORT

- **NSF CCF-1350563: “CAREER: Low-Rank Matrix Modeling for Constrained Reconstruction from Noisy and Sparsely-Sampled Data.”**  
 Communications and Information Foundations Program, National Science Foundation  
 Role: Principal Investigator. 04/2014–03/2019
- **NIH R21 EB022951 (Impact Score 18; top 3%): “Faster MRI with Sparse Sampling and Low-Rank Modeling.”**  
 National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health  
 Role: Principal Investigator. 07/2016–06/2018
- **AFRL FA8650-17-C-9112: “PRISMA: Ptychography-based Rapid Imaging of Nano-Structures with Multi-layer Assemblies.”**  
 Air Force Research Laboratory  
 Role: Co-Investigator (PI: J. Damoulakis). 11/2016–1/2022
- **NIH R01 NS074980 (Impact Score 20; top 5%): “Interactive Software for Semiautomated Analysis of Structural Brain Images.”**  
 National Institute of Neurological Disorders and Stroke, National Institutes of Health  
 Role: Co-Investigator (PI: D. Shattuck/R. Leahy). 04/2017–03/2022
- **NIH R01 NS089212 (Impact Score 14; top 2%): “A Brain Atlas for Mapping Connectivity in Focal Epilepsy.”**  
 National Institute of Neurological Disorders and Stroke, National Institutes of Health  
 Role: Co-Investigator (PI: J. Mosher/R. Leahy). 04/2015–06/2020

## COMPLETED RESEARCH SUPPORT

- **NIH UL1 RR031986: “Improved DCE Neuro-MRI using Constrained Reconstruction.”**  
 Southern California Clinical and Translational Science Institute Multidisciplinary Research Project Award  
 Role: Co-Investigator (PI: K. Nayak). 07/2013–06/2014

## INVITED TALKS (EXTERNAL)

- “Joint Reconstruction for Diffusion MRI,” Biomedical Magnetic Resonance Laboratory, Washington University in St. Louis School of Medicine, St. Louis, MO, August 10, 2007.
- “High-Resolution Diffusion MRI,” *Annual Conference of the IEEE Engineering in Medicine and Biology Society*, Lyon, France, August 23, 2007. Special session for student paper award finalists.
- “High-Resolution MR Metabolic Imaging,” *Annual Conference of the IEEE Engineering in Medicine and Biology Society*, Lyon, France, August 25, 2007. Special session titled “MRI: Recent Advances in Physiological and Metabolic Imaging.”

- “Data Acquisition Schemes for Compressed Sensing in Magnetic Resonance Imaging,” *Illinois/Missouri Applied Harmonic Analysis Seminar*, Bloomington, IL, April 19, 2008.
- “An Introduction to Magnetic Resonance Imaging,” *Harmonic Analysis and Mathematical Physics Seminar*, Urbana, IL, October 28, 2008.
- “MR Image Reconstruction using GPU-level Parallelism,” *Universal Parallel Computing Research Center Multicore Applications Workshop*, Redmond, WA, May 28, 2009.
- “Accelerating Advanced MR Image Reconstruction using GPUs,” *Virtual School of Computational Science and Engineering Summer School 2009: Many-Core Processors for Science and Engineering Applications*, Urbana, IL, August 10, 2009.
- “Joint Reconstruction of Noisy High-Resolution MR Image Sequences,” Center for Imaging of Neurodegenerative Diseases, San Francisco VA Medical Center, San Francisco, CA, July 6, 2010.
- “Label-Free High-Resolution Imaging of Live Cells With Deconvolved Spatial Light Interference Microscopy,” *Annual Conference of the IEEE Engineering in Medicine and Biology Society*, Buenos Aires, Argentina, September 1, 2010. Special session for student paper award finalists.
- “Magnetic Resonance Imaging and Spectroscopy: Beyond the Fourier Transform,” Electrical and Computer Engineering Graduate Seminar, University of Iowa, Iowa City, IA, March 3, 2011.
- “Toward High-Resolution MR Neuroimaging: Beyond the Fourier Transform,” Ming Hsieh Department of Electrical Engineering, University of Southern California, Los Angeles, CA, March 18, 2011.
- “Low-Rank Approximations for Dynamic Imaging,” *IEEE International Symposium on Biomedical Imaging*, Chicago, IL, March 31, 2011. Special session titled “Compressive Sampling for Biomedical Imaging.”
- “Reconstructing High-Dimensional Signals from Sparsely-Sampled Data using Rank Constraints: Application to Accelerated Magnetic Resonance Imaging,” *Janelia Conference on BioImage Informatics II*, Howard Hughes Medical Institute Janelia Farm Research Campus, Ashburn, VA, September 20, 2011.
- “Some Signal Processing Methods for Faster and Better Diffusion MRI,” *Symposium for Brain Imaging Techniques and Analysis*, National Yang-Ming University, Taipei, Taiwan, June 7, 2012.
- “Constrained Magnetic Resonance Imaging: Denoising and Sparse Sampling,” Research Center for Information Technology Innovation, Academia Sinica, Taipei, Taiwan, June 8, 2012.
- “Magnetic Resonance Image Sequences: Acquisition, Reconstruction, and Analysis.” *NSF IGERT on Video Bioinformatics Fall Retreat*, Lake Arrowhead, CA, October 11, 2014.  
[Keynote Lecture](#)
- “Constrained Magnetic Resonance Imaging: Beyond the Fourier Transform.” Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan, June 22, 2015.
- “Low-Rank Modeling of Local k-Space Neighborhoods: From Phase and Support Constraints to Structured Sparsity.” *SPIE Wavelets and Sparsity XVI*, San Diego, CA, August 2015. Special session entitled “Sparse Representations in MRI.”
- “Constrained Magnetic Resonance Imaging: Moving Beyond the Fourier Transform using the Blessings of Dimensionality.” *BrainMap Seminar Series*, Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital/Harvard-MIT Division of Health Sciences and Technology, Boston, MA, October 21, 2016.
- “Computational imaging with LORAKS: Reconstructing linearly predictable signals using low-rank matrix regularization.” *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, October 2017. Special session titled “Computational Imaging.”

## TEACHING

- **Instructor**, EE 483: Introduction to Digital Signal Processing, University of Southern California, Spring 2014, Spring 2015, Spring 2016, Spring 2017. (Course I substantially revised).
- **Instructor**, EE 591: Magnetic Resonance Imaging and Reconstruction, University of Southern California, Fall 2013, Fall 2016. (Course I substantially revised).
- **Instructor**, EE 592: Computational Methods for Inverse Problems, University of Southern California, Fall 2014, Fall 2015, Fall 2017. (Course I created/developed).
- **Instructor** (with K. Nayak), EE 598: Electrical Engineering Research Seminar, University of Southern California, Fall 2013. (Course I created with K. Nayak).

- **Instructor**, EE 599: Vector Space Methods for Signal Processing, University of Southern California, Spring 2013. (Course I created/developed).
- **Guest Lecturer**, EE 301L: Linear Systems, University of Southern California, Fall 2012, Fall 2013.
- **Guest Lecturer**, EE 598: Electrical Engineering Research Seminar, University of Southern California, Fall 2012.
- **Guest Lecturer**, EE 599: Computational Imaging and Brain Connectivity, University of Southern California, Spring 2012.
- **Guest Lecturer**, BME 525: Advanced Biomedical Imaging, University of Southern California, Spring 2013, Spring 2014, Spring 2015, Spring 2016, Spring 2017.
- **Guest Lecturer**, BME 533: Biomedical Engineering Seminars, University of Southern California, Fall 2012.
- **Guest Lecturer**, NIIN 598: Neuroimaging and Informatics External Speaker Seminar Series, University of Southern California, Fall 2016.
- **Guest Lecturer**, ECE 480: Magnetic Resonance Imaging, University of Illinois at Urbana-Champaign, Fall 2005 and Fall 2007.
- **Guest Lecturer**, BIOE 120: Introduction to Bioengineering, University of Illinois at Urbana-Champaign, Fall 2007.

## MENTORING

- Supervised Research
  - Ph.D. Students (serving as primary advisor)
    - Divya Varadarajan, USC Electrical Engineering. Fall 2013-Present. Qualifying exam: Spring 2016. Final exam: Fall 2017.
    - Daeun Kim, USC Electrical Engineering. Fall 2013-Present. Qualifying exam: Fall 2017.
    - Tae Hyung Kim, USC Electrical Engineering. Fall 2014-Present.
    - Rodrigo Lobos, USC Electrical Engineering. Fall 2015-Present.
    - Yunsong Liu, USC Electrical Engineering. Starting Fall 2017.
  - Ph.D. Students (not as primary advisor)
    - Alexander Serrano, USC Electrical Engineering (primary advisor: R. Leahy). Fall 2016-Present.
    - Minqi Chong, USC Biomedical Engineering (primary advisor: R. Leahy). Fall 2014-Present.
    - Chitresh Bhushan, USC Electrical Engineering (primary advisor: R. Leahy). Fall 2011-Spring 2016. Now a research scientist at GE Global Research.
    - Syed Ashrafulla, USC Electrical Engineering (primary advisor: R. Leahy). Fall 2011-Spring 2014. Now a software engineer at Google.
    - Yanguang Lin, USC Electrical Engineering (primary advisor: R. Leahy). Fall 2011-Spring 2012. Now a Senior Modeling Scientist at Quantcast.

## PROFESSIONAL AFFILIATIONS

- **International Society for Magnetic Resonance in Medicine**, Member
- **Institute of Electrical and Electronics Engineers**, Senior Member
- **IEEE Engineering in Medicine and Biology Society**, Senior Member
- **IEEE Signal Processing Society**, Senior Member



## SERVICE

### Technical Committees:

- Member (Elected Position), Computational Imaging (CI) Special Interest Group, IEEE Signal Processing Society, 2016-2018.
  - Chair, Nominations and Elections Subcommittee, 2017
- Member (Elected Position), Bioimaging and Signal Processing (BISP) Technical Committee, IEEE Signal Processing Society, 2014-2016, 2017-2019.
- Associate Member (Elected Position), Bioimaging and Signal Processing (BISP) Technical Committee, IEEE Signal Processing Society, 2011-2013.
- Member, USC Dana & David Dornsife Cognitive Neuroscience Imaging Center Technical Committee

### Awards Committees:

- Member, APSIPA Annual Summit & Conference Awards Committee, 2012
- Member, IEEE ISBI Best Student Paper Selection Committee, 2013
- Member, USC EE Fellowship Committee (SIPG representative), 2014
- Member, USC Ming Hsieh Institute Ph.D. Scholar Evaluation Committee, 2012
- Member, USC Electrical Engineering Research Festival Judging Committee, 2012, 2013, 2014, 2015, 2016

### Organizing Committees:

- Special Session on “Biomedical Image Acquisition, Reconstruction, and Quantitation,” APSIPA Annual Summit & Conference 2012 (with R. Leahy and K. Nayak)
- USC Medical Imaging Seminar Series, Fall 2012-Present (with R. Leahy, K. Nayak, and H. Hu)
- USC Ming Hsieh Distinguished Lecturer Series, 2013-2014 (with K. Chugg, B. Reichardt, P. Bogdan, and P. Georgiou)
- USC Speech MRI Summit, 2014 (with K. Nayak, S. Narayanan, S. Lee, and R. Leahy)
- USC Brain and EE minisymposium, 2015 (with R. Leahy)

### Session Moderator at International Conferences:

- Allerton Conference on Communication, Control, and Computing 2009
- Annual Conference of the IEEE Engineering in Medicine and Biology Society 2010
- IEEE International Symposium on Biomedical Imaging 2012, 2013
- International Symposium on Magnetic Resonance in Medicine 2013, 2014, 2015, 2016 (two sessions), 2017
- APSIPA Annual Summit & Conference 2012

### Editorial Service:

- Associate Editor for IEEE Transactions on Medical Imaging, 2014-Present
- International Advisory Board Member, Physics in Medicine and Biology, 2016-Present
- Area Chair for IEEE International Conference on Image Processing (ICIP) 2014, 2016
- Area Chair for IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2017

### Awards for Service:

- Distinguished Reviewer for Magnetic Resonance in Medicine 2012, 2013, 2014, 2015, 2016
- Distinguished Reviewer for the Journal of Magnetic Resonance Imaging 2016

### Journal Reviewing:

- ACM Computing Surveys
- Biomedical Signal Processing and Control
- Computerized Medical Imaging and Graphics
- Computers in Biology and Medicine
- Concepts in Magnetic Resonance Part A
- Concepts in Magnetic Resonance Part B
- Europhysics Letters
- IEEE Journal of Selected Topics in Signal Processing
- IEEE Signal Processing Letters
- IEEE Transactions on Biomedical Engineering
- IEEE Transactions on Computational Imaging
- IEEE Transactions on Image Processing
- IEEE Transactions on Information Technology in Biomedicine
- IEEE Transactions on Medical Imaging
- IEEE Transactions on Signal Processing
- International Journal of Biomedical Imaging
- Journal of Magnetic Resonance
- Journal of Magnetic Resonance Imaging
- Journal of Neuroscience Methods
- Journal of Parallel and Distributed Computing
- Magnetic Resonance in Medicine
- Medical Image Analysis
- Medical Physics
- NeuroImage
- Optics Express
- Parallel Computing
- Physics in Medicine and Biology
- PLOS ONE
- Recent Patents on Biomedical Engineering
- SIAM Journal on Imaging Sciences
- Signal, Image and Video Processing
- Signal Processing

### Grant Reviewing:

- Early Career Reviewer program at the Center for Scientific Review, National Institutes of Health (NIH)
- NIH Biomedical Imaging Technology Study Section A (BMIT A), ad hoc reviewer (09/2016, 02/2017).
- NSF Communications and Information Foundations (CIF), Signal Processing Systems Image and Multidimensional Signal Processing (IMDSP) Panel (ad hoc reviewer)
- NSF Information and Intelligent Systems (IIS), Information Integration and Informatics (III) Panel (ad hoc reviewer)
- NSF Experimental Program to Stimulate Competitive Research (EP-SCoR), Research Infrastructure Improvement (RII) Panel (ad hoc reviewer)
- Saban Research Institute Inspire Innovation Program
- Southern California Clinical and Translational Science Institute (SC-CTSI) Technology Awards
- Israeli Ministry of Science, Technology and Space (ad hoc reviewer)
- Wright Foundation Grant Program

### Conference Reviewing:

- IEEE Engineering in Medicine and Biology Conference (EMBC)
- IEEE Global Conference on Signal and Information Processing (GlobalSIP)
- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
- IEEE International Conference on Image Processing (ICIP)
- IEEE International Symposium on Biomedical Imaging (ISBI)
- IEEE International Symposium on Information Theory (ISIT)
- IEEE International Symposium on Circuits and Systems (ISCAS)
- International Society for Magnetic Resonance in Medicine Annual Meeting and Exhibition (ISMRM)
- International Conference on Information Processing in Medical Imaging (IPMI)
- International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)
- Organization for Human Brain Mapping Annual Meeting (OHBM)

### Public Education:

- Scientific consultant and on-screen interviewee, “How to Build...Everything” television series, Season 1, Episode 11 (“Rocketship Revealed”). Premiered on the Discovery Science Channel on November 7th, 2016.  
<https://www.sciencechannel.com/tv-shows/how-to-build-everything/full-episodes/rocketship-revealed>
- Contributor of scientific visualizations, Permanent Exhibition on “Your Brain,” Franklin Institute Science Museum in Philadelphia. On display from June 2014-Present.
- Instructor, “Magnetic Resonance Imaging: A Glimpse Inside,” Welcome Week Micro-Seminar, USC Undergraduate Programs, 2014.
- Faculty Governing Board Member, Body Engineering Los Angeles GK-12 Program, 2013-2015.

### Other Research Education:

- Panelist, “Algorithm Breakdown” Secret Session at the 2017 Annual Meeting of the ISMRM. This session provides a forum where junior researchers have an interactive discussion with three panelists who are experienced in the development, validation, and application of novel MRI-based formulations and algorithms.
- Panelist, USC External Fellowship Proposal Review Clinics, October 2015.
- Speaker, UCLA Advanced Neuroimaging Summer Program (NITP), July 2014.
- Speaker, Virtual School of Computational Science and Engineering Summer School 2009: Many-Core Processors for Science and Engineering Applications
- Intel Graduate Research Mentor, Intel Undergraduate Research Scholars Program, 2006.

### Open-Source Research Software Development:

- Co-developer of the Illinois Massively Parallel Acceleration Toolkit for Image reconstruction with ENhanced Through-put in MRI (IMPATIENT MRI) ([http://impact.crhc.illinois.edu/mri/mri\\_toolset.aspx](http://impact.crhc.illinois.edu/mri/mri_toolset.aspx), GPU-based Magnetic Resonance Image Reconstruction Software)
- Co-developer of BrainSuite software (<http://brainsuite.org/>, Magnetic Resonance Image Analysis Tools)
- Developer and distributor of MRI reconstruction software (<http://mr.usc.edu/code.html>) and MRI data (<http://mr.usc.edu/data.html>).

**Research Software Training:**

- Speaker, BrainSuite Training @ USC, September 2013.
- Speaker, BrainSuite Training @ UCLA, November 2013.
- Speaker, BrainSuite Training @ CHLA, August 2014.
- Co-organizer, BrainSuite Training @ USC, October 2015.

SELECTED PRE-2005 ACADEMIC AWARDS AND HONORS

- **Bronze Tablet Award (University Honors)**, University of Illinois at Urbana-Champaign, Spring 2004.
- **Edmund J. James Scholar Engineering Honors Program**, University of Illinois at Urbana-Champaign, Fall 2000-Spring 2004.
- **James Newton Matthews Scholarship**, University of Illinois at Urbana-Champaign, Fall 2000-Spring 2004.
- **Henry O. Koehler Memorial Scholarship**, Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Fall 2003-Spring 2004.
- **Dwight Glasscock Scholarship**, College of Engineering, University of Illinois at Urbana-Champaign, Fall 2003-Spring 2004.
- **McDonnell Memorial Scholarship**, College of Engineering, University of Illinois at Urbana-Champaign, Fall 2002-Spring 2003.
- **Harriet and Robert Perry Scholarship**, Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Fall 2002-Spring 2003.
- **Calvin B. Niccols Memorial Scholarship**, College of Engineering, University of Illinois at Urbana-Champaign, Fall 2000-Spring 2002.
- **Award from Accenture and the College of Engineering in recognition of outstanding scholarship, leadership, extra-curricular involvement and professional presence**, University of Illinois at Urbana-Champaign, Spring 2002.