

CURRICULUM VITAE

MATHEWS JACOB

EMPLOYMENT

2019- Present: Professor *Dept. of ECE, Univ. of Iowa*
2019- Present: Professor *Dept. of BME, Radiation Oncology, Radiology, Ulowa, Courtesy Appt*
2015- 2019: Associate Professor *Dept. of ECE, Univ. of Iowa*
2015- 2019: Associate Professor *Dept. of BME, Radiation Oncology, Radiology, Ulowa, Courtesy Appt*
2011- 2015: Assistant Professor *Dept. of ECE, Univ. of Iowa*
2013- Present: Assistant Professor *Dept. of BME, Univ. of Iowa, Courtesy Appointment*
2011- Present: Assistant Professor *Dept. of Radiation Oncology, Univ. of Iowa, Courtesy Appointment*
2007- 2011: Assistant Professor *Dept. of BME, Univ. of Rochester*
2007- 2011: Assistant Professor *Dept. of Radiology, Univ. of Rochester*
2003- 2006: Beckman Post-Doctoral Fellow *Univ. of Illinois at Urbana Champaign*
1999- 2003: PhD in Biomedical Imaging *Biomedical Imaging Group, Swiss Federal Institute of Technology*

ACADEMIC & PROFESSIONAL HONORS

2019 : Co-Author, Best Machine Learning Paper in IEEE ISBI
2016-2020 : Associate Editor, IEEE Transactions on Computational Imaging
2015 : Co-Author, Best Paper Award in IEEE ISBI
2014 : Best paper in the BioImaging & Signal Processing at ICASSP 2014
2011 : American Cancer Society New Investigator Award
2009 : CAREER Award, National Science Foundation
2009-Present : Associate Editor, IEEE Transactions on Medical Imaging
2008 : Junior Lecturer, IEEE EMBS International Summer School on Biomedical Imaging
2003-2006 : Beckman Fellowship, University of Illinois at Urbana Champaign
1996 : 30th rank in National GATE exams (~40,000 students)
1996 : Second rank in BTech outgoing exams from Calicut University (~240 students)

TEACHING

2021: Instructor: Applied Machine Learning, Linear Systems
2020: Instructor: Machine Learning, Linear Systems
2019: Instructor: Machine Learning, Image Processing
2017: Instructor: Computers in Engineering, Advanced Image Processing, Pattern Recognition
2016: Instructor: Computers in Engineering, Digital Signal processing, Computers in Engineering
2015: Instructor: Pattern Recognition, Advanced Image Processing, Computers in Engineering
2014: Instructor: MR Imaging Systems, Linear Systems 1, Computers in Engineering
2013: Instructor: Pattern Recognition, Computers in Engineering
2012: Instructor: Computers in Engineering
2011: Instructor: Digital Signal Processing
2010: Biomedical Computation
2009: Biomedical Computation

DEPARTMENTAL SERVICE

9/13 - present: Graduate committee, Department of ECE
9/12 - 9/13: Undergraduate committee, Department of ECE
9/11 - 9/12: Graduate committee, Department of ECE
9/07- 9/11: Member: Graduate committee, University of Rochester
9/07 - 9/11: Member, Graduate Admission Committee, University of Rochester

COLLEGE SERVICE

1/21 -Present: Promotion and Tenure Committee, College of Engineering, Univ. Iowa
9/20 -Present: Deans Promotion Advisory Committee, College of Engineering, Univ. Iowa

UNIVERSITY SERVICE

9/16 - Present: Steering Committee, Aging Brain and Mind Initiative

9/11 - Present: Research Advisory Committee, Magnetic Resonance Research Facility

PROFESSIONAL SERVICE

International

- Guest Editor, IEEE Transactions on Medical Imaging, Second Special Issue on Deep Learning in Image Reconstruction
- General Chair, IEEE International Symposium on Biomedical Imaging, 2020, Iowa City
- Lead Guest Editor, IEEE Signal Processing Magazine, 2020, Special Issue on Computational MRI
- Steering Committee Member, IEEE Transactions on Medical Imaging, 2017-present
- Associate Editor, IEEE Transactions on Computational Imaging, 2012-present
- Associate Editor, IEEE Transactions on Medical Imaging, 2009-present
- Member, IEEE Special Interest Group on Computational Imaging, 2016-present
- Member, IEEE TC on Bioimaging and Signal Processing, 2010-2016
- Technical Program Committee, ISBI 2016, Prague
- Technical Program Committee, ICSSP 2011, Calicut, India
- Organizer, Special Session on MR imaging at Wavelets and Sparsity, 2017, 2015, 2013
- 2010-present Track Chair, IEEE International Conf. Image Processing (ICIP)
- Track Chair, IEEE International Conference on Image Processing (ICIP) 2010, Hongkong
- Associate Editor, Invited Sessions, IEEE EMBS, 2010, Minneapolis
- Panel Member, Neuroscience and Ophthalmic Imaging Technologies, National Institute of Health
- Proposal reviewer, National competence center for Biomedical Imaging, Switzerland, 2010
- Proposal reviewer, Image and Signal Processing panel, NSF-CCF, 2010
- Proposal reviewer, Fondecyt (National Fund for Science & Technology, Chile), 2009
- Proposal reviewer, Sensing and Biomedical Engineering panel, NSF-CBET, 2009
- Proposal reviewer, MRI-R2 panel, NSF-CBET, 2009

Regular reviewer of

IEEE Transactions on Medical Imaging (TMI), Image Processing (T-IP), Signal Processing (T-SP), Pattern Analysis and Machine Intelligence (TPAMI), Biomedical Engineering (TBME), IEEE Signal Processing Letters, Magnetic Resonance in Medicine (MRM), Signal Processing, International Journal of Computer Vision (IJCV), Journal of Mathematical Imaging and Vision (JMIV) Advances in Computational Mathematics (ACM)

PHD DISSERTATIONS SUPERVISED

1. A Balachandrasekaran, Currently Research Fellow at Boston Children's Hospital 2018
2. Y Mohsin, 2018, Currently with Morteson Construction
3. S. Biswas, 2018, Currently Scientist at KLA Tencor
4. S. Poddar, 2018: Currently Scientist at Analog Devices, **Best student paper in BISP, ICASSP 2014**
5. A. Balachandrasekaran: 2018, Currently post-doc in MGH
6. I. Bhattacharya: 2017, Currently Senior Imaging Scientist at Roche Diagnostics
7. C. Chen, 2017: Currently post-doc at MGH **Runner up in ISMRM fat-water decomposition challenge, 2012**
8. S. Bhave, 2016: Currently scientist at Canon Medical, **Finalist for student paper award at IEEE-EMBC 2014**
9. G. Ongie, 2016: Currently tenure track Assistant Professor at Marquette University. **IEEE ISBI best paper award, 2015, Best thesis award, Univ Iowa**
10. S. Lingala, 2013: Currently Tenure Track Asst. Prof. Univ. Iowa, **2016 Rex Montgomery best dissertation prize, Recipient of AHA pre-doctoral award, ISMRM Junior Fellow 2016, ISMRM magna cum laude 2011**
11. Y. Hu, 2013: Currently Associate Professor, Harbin Institute of Technology, China,
12. Z. Yang, 2013: Currently with BigData Analytics.

MS DISSERTATIONS SUPERVISED

1. X. Zhou, 2013
2. K. Satyananda 2010
3. S. Bora 2010
4. R. Shanker 2010

PEER REVIEWED JOURNAL PAPERS

1. A.H. Ahmed, Y. Mohsin, R. Zhao, Y. Yang, M. Salerno, P. Nagpal, M. Jacob, Free-breathing and ungated cardiac cine using navigator-less spiral STORM, IEEE TMI, in press.
2. A. Joy, M. Jacob, J. Paul, Compressed sensing MRI using an interpolation-free non-linear diffusion model, Magnetic Resonance in Medicine, Sept 16,2020.
3. A. Pramanik, H. K. Aggarwal, M. Jacob, Deep Generalization of Structured Low-Rank Algorithms (Deep-SLR), IEEE TMI, 4186 - 4197, Vol 39, Issue 12, Dec 2020.
4. H. K. Aggarwal, M. Jacob, J-MoDL: Joint Model-Based Deep Learning for Optimized Sampling and Reconstruction, Journal of Selected Topics in Signal Processing, in press
5. M. Jacob, M. Mani, J.C. Ye, Structured Low-Rank Algorithms, Theory, MR Applications, and Links to Machine Learning, IEEE Signal Processing Magazine, pp 54 - 68, Jan 2020.
6. M.Mani, M. Jacob, G. McKinnon, B. Yang, B. Rutt, V. Magnotta, SMS MUSSELS: A Navigator-free Reconstruction for Simultaneous Multislice Accelerated Multi-shot Diffusion Weighted Imaging, Magnetic Resonance in Medicine, 83(1):154-169, Jan 2020
7. M.Jacob, J.C.Ye, M. Doneva, L. Ying, Computational MRI: Compressive Sensing and Beyond, IEEE Signal Processing Magazine, Editorial, Jan 2020.
8. M. Mani, H. Aggarwal, V. Magnotta, M. Jacob, Improved MUSSELS reconstruction for high-resolution multishot diffusion weighted imaging, Magnetic Resonance in Medicine, Jun;83(6):2253-2263, Dec 2019.
9. Q. Zou, S. Poddar, M. Jacob, Sampling of Planar Curves: Theory and Fast Algorithms, IEEE Transactions on Signal Processing, 20 November 2019
10. H.K. Aggarwal, M. Mani, M. Jacob, MoDL-MUSSELS: Model-Based Deep Learning for Multi-Shot Sensitivity Encoded Diffusion MRI, IEEE Transactions on Medical Imaging, 1268 - 1277, Oct 2019.
11. S. Poddar, M. Jacob, Clustering of Data with Missing Entries using Non-convex Fusion Penalties, IEEE Transactions on Signal Processing, pp 5865 - 5880, Sept 2019 .
12. Y. Hu, X. Li, Y. Gu, M. Jacob, Hyperspectral Image Recovery using Nonconvex Sparsity and Low-Rank Regularizations, IEEE Transactions on Geoscience and Remote Sensing, 532 - 545, Sept 2019.
13. J. Humston, I. Bhattacharya, M. Jacob, and C. Cheatum,. Optimized Reconstructions of Compressively Sampled Two-Dimensional Infrared Spectra, Journal of Chemical Physics, 21;150, Jun 2019.
14. A. Joy, M. Jacob, J. Paul, Directionality Guided Non-Linear Diffusion Compressed Sensing MR Image Reconstruction, Magnetic Resonance in Medicine, pp. 2326-2342, Jul 30, 2019.
15. R. Zhou, Y. Yang, R.C. Mathew, J.M. Mugler, D.S. Weller, C.M. Kramer, A.H.A. Ahmed, M. Jacob, M. Salerno, Free Breathing Cine Imaging with Motion-Corrected Reconstruction at 3T Using SPiral Acquisition with Respiratory correction and Cardiac Self-gating (SPARCS), Magnetic Resonance in Medicine, 82(2):706-720, Aug 2019
16. S. Biswas, H. Aggarwal, M. Jacob, Dynamic MRI using model-based deep learning and STORM priors: MoDL-STORM, Magnetic Resonance in Medicine, Jul;82(1):485-494, 2019.
17. Y. Hu, X. Liu, M. Jacob, A Generalized Structured Low-Rank Matrix Completion Algorithm for MR Image Recovery, IEEE Transactions on Medical Imaging, pp 1841-1851, 2019.
18. Y. Mohsin, S. Poddar, M. Jacob, Free-breathing & ungated cardiac MRI using iterative STORM (i-STORM), IEEE Transactions on Medical Imaging;38(10):2303-2313, Oct 2019
19. S. Poddar, Y. Mohsin, A. Deidra, B. Thattayilath, R. Ashwath, M. Jacob, Manifold recovery using kernel low-rank regularization: application to dynamic imaging, IEEE Transactions on Computational Imaging,478 - 491, January 2019.
20. A. Balachandrasekaran, M. Mani, M. Jacob, Calibration-free B0 correction of EPI data using structured low rank matrix recovery, IEEE Transactions on Medical Imaging, Apr;38(4):979-990, 2019
21. H.K. Aggarwal, M.P. Mani, M. Jacob, MoDL: Model Based Deep Learning Architecture for Inverse Problems, IEEE Transactions on Medical Imaging, Vol. 38, No. 2, February 2019.
22. R.H. Blair, E.Eichen, M. Jacob, D. Gotz, Bootstrapping estimates of stability for clusters, observations and model selection, Computational Statistics, 2019.

23. M. Mani, V. Magnotta, M. Jacob, A General Algorithm for Compensation of Trajectory Errors: Application to Radial Imaging, *Magnetic Resonance in Medicine*, in press, 2018
24. G. Ongie, S. Biswas, M. Jacob, Convex recovery of continuous domain piecewise constant images from non-uniform Fourier samples, *IEEE Transactions on Signal Processing*, Jan 2018, pp 236 - 250.
25. I. Bhattacharya, J. Humston, C. Cheatum, M. Jacob, Accelerating two-dimensional infrared spectroscopy while preserving lineshapes using GIRAF, *Optics Letters*, Nov 2017, 4573-4576.
26. A. Balachandrasekaran, V. Magnotta, M. Jacob, Recovery of damped exponentials using structured low rank matrix completion, *IEEE Transactions on Medical Imaging*, July 2017, pp. 2087 - 2098
27. Ongie, M. Jacob, GIRAF: A Fast Algorithm for Structured Low-Rank Matrix Recovery, *IEEE Transactions on Computational Imaging*, Dec 2017, pp. 535 - 550.
28. C. Chen, A. Shah, X. Wu, M. Jacob, A Rapid 3D fat-water decomposition method using Globally Optimal Surface Estimation (R-GOOSE), *Magnetic Resonance in Medicine*, July 2017, pp 2401-2407.
29. I. Bhattacharya, M. Jacob, Compartmentalized low-rank recovery for high resolution lipid unsuppressed MRSI, *Magnetic Resonance in Medicine*, Oct 2017, pp 1267-1280.
30. M. Mani, M. Jacob, D. Kelley, V. Magnotta, Multishot sensitivity encoded diffusion data recovery using structured low rank matrix completion (MUSSELS), *Magnetic Resonance in Medicine*, Volume 78, Issue 2, 2017 pp 494-507.
31. J. Humston, I. Bhattacharya, M. Jacob, C. Cheatum, Compressively Sampled Two-Dimensional Infrared Spectroscopy That Preserves Lineshape Information, *Journal of Physical Chemistry A*, 2017, 121 (16), pp 3088-3093.
32. S. Biswas, S. Dasgupta, R. Mudumbai, M. Jacob, Subspace aware recovery of low-rank and jointly sparse signals, *IEEE Transactions on Computational Imaging*, Volume: 3, Issue: 1, March 2017, pp 22-35
33. H. Achanta, S. Biswas, S. Dasgupta, B. Dasgupta, M. Jacob, R. Mudumbai, The Spark of Fourier Matrices: Connections to Vanishing Sums and Coprimeness, *Digital Signal Processing*, Volume 61, February 2017, Pages 76-85.
34. Y. Mohsin, S.G Lingala, E. DiBella, M. Jacob, Accelerated dynamic MRI Using Patch Regularization for Implicit motion Compensation (PRICE), *Magnetic Resonance in Medicine*, 77:1238-1248, 2017. [Software]
35. C. Liao, C. Ying, X. Cao, C. Song, H. He, M. Mani, M. Jacob, V. Magnotta, J. Zhong, Efficient Parallel Reconstruction for High Resolution Multi-shot Spiral Diffusion Data with Low Rank Constraints, *Magnetic Resonance in Medicine*, 2017 Mar;77(3):1359-1366
36. G. Ongie, M. Jacob, Off-the-Grid Recovery of Piecewise Constant Images from Few Fourier Samples, *SIAM Journal on Imaging Sciences*, 2016, pp. 1004-1041.
37. S. Bhave, S.G Lingala, J. Newell, S. Nagle, M. Jacob, Blind Compressed Sensing Enables 3D Dynamic Free Breathing MR Imaging of Lung Volumes and Diaphragm Motion, *Investigative Radiology*, 2016 Jun;51(6):387-99
38. S. Poddar, M. Jacob, Dynamic MRI using Smoothness Regularization on Manifolds (SToRM), *IEEE Transactions on Medical Imaging*, vol 35, no 4, April 2016.
39. S. Bhave, S.G. Lingala, C.P. Johnson, V.A. Magnotta, M. Jacob, "Accelerated whole-brain multi-parameter mapping using blind compressed sensing, *Magnetic Resonance in Medicine*, 2016 Mar;75(3):1175-86
40. S. Biswas, H. Achanta, M. Jacob, S. Dasgupta, R. Mudumbai, Recovery of Low Rank and Jointly Sparse Matrices with Two Sampling Matrices, *IEEE Signal Processing Letters*, 22 (11), pp 1945 - 1949, 2015.
41. G. Ongie, M. Jacob, Recovery of discontinuous signals using group sparse higher degree total variation, *IEEE Signal Processing Letters*, 22 (9), pp 1414 - 1418, 2015.
42. Y. Mohsin, G. Ongie, M. Jacob, Iterative shrinkage algorithm for patch smoothness regularized medical image recovery, *IEEE Trans. Medical Imaging*, 34(12), pp 2417-28, 2015.
43. S.G. Lingala, E. DiBella, M. Jacob, Deformation corrected compressed sensing (DC-CS): a novel framework for accelerated dynamic MRI, *IEEE Transactions on Medical Imaging*, 34(1):72-85, 2015. (supplementary videos)
44. M. Mani, M. Jacob, V. Magnotta, J. Zhong, Fast iterative algorithm for the reconstruction of multi-shot non-Cartesian diffusion data, *Magnetic Resonance in Medicine*, 74 (4), pp 1086-1094, 2015.
45. M. Mani, M. Jacob, A. Guidon, V. Magnotta, J. Zhong, Acceleration of high angular and spatial resolution diffusion imaging using compressed sensing with multichannel spiral data, *Magnetic Resonance in Medicine*, 73, pp 126-138, 2015.
46. C. Cui, X. Wu, J. Newell, M. Jacob, Fat water decomposition using Globally Optimal Surface Estimation (GOOSE) algorithm, *Magnetic Resonance in Medicine*, Volume 73, Issue 3, pages 1289-1299, 2015. [software] (ISMRM challenge: team name KongfuPanda)
47. Y. Hu, G. Ongie, M. Jacob, Generalized Higher Degree Total Variation (HDTV) Regularization, *IEEE Transactions on Image Processing*, vol 23 (6), pp 2423-2435, 2014. [software]

48. Z. Yang, M. Jacob, Mean square optimal NUFFT approximation for efficient non-Cartesian MRI reconstruction , Journal of Magnetic Resonance, vol 242, pp 126-135, May 2014. [software]
49. A. Daducci, E. Rodriguez, M. Descoteaux, E. Garyfallidis, Y. Gur, Y. Lin, M. Mani, S. Merlet, M. Paquette, A. Manzanares, M. Reiser, P. Rodrigues, F. Seppeband, E. Caruyer, J. Choupan, R. Deriche, M. Jacob, G. Menegaz, V. Prckovska, M. Rivera, Y. Wiaux, J. Thiran, Quantitative comparison of reconstruction methods for intra-voxel fiber recovery from diffusion MRI, IEEE Transactions on Medical Imaging, vol 33 (2), 384-399, 2014.
50. S. Bhave, R. Eslami, M. Jacob, "A sparse spectral deconvolution algorithm for non-Cartesian MRSI", Magnetic Resonance in Medicine, pages 469–476, Feb 2014
51. S. G. Lingala, M. Jacob, Blind Compressed Sensing Dynamic MRI", IEEE Transactions on Medical Imaging, pp 1132-1145, vol.32(6), June 2013. [software]
52. S. G. Lingala, E. DiBella, G. Adluru, C. McGann, M. Jacob, Accelerating free breathing myocardial perfusion MRI using multi coil radial k-t SLR, Physics in Biology and Medicine, vol.58(20), pp. 7309-7327, Sep 2013. (link to supplementary material). [software]
53. Z. Yang, M. Jacob, "Nonlocal regularization of inverse problems: a unified variational framework", IEEE Trans. Image Processing, pp: 3192-203, vol.22(8), Aug 2013.
54. Y. Hu, M. Jacob, "Higher degree total variation (HDTV) regularization for image recovery", IEEE Trans. Image Processing, pp 2559-2571, Vol 21, No 5, May 2012. [software]
55. Y. Hu, S. G. Lingala, M. Jacob, "A fast majorize-minimize algorithm for the recovery of sparse and low rank matrices", IEEE Trans. Image Processing, pp 742-753, Vol 21, No 2, Feb 2012.
56. S. G. Lingala, Y. Hu, E. DiBella, M. Jacob, "Accelerated dynamic MRI exploiting sparsity and low-rank structure", IEEE Trans. Medical Imaging, pg 1042-1054, vol 30, May 2011. [software]
57. K. Satyananda, M. Jacob, "Non-iterative regularized reconstruction algorithm for non-Cartesian MRI", Magnetic Resonance Imaging, Feb 2011.
58. R. Eslami, M. Jacob, "Robust Reconstruction of MRSI Data Using a Sparse Spectral Model and High Resolution MRI Priors", IEEE Transactions on Medical Imaging, June 2010, vol 29, issue 6, pp 1297-309
59. Y. Lin, T. Gu, C. Zhong, S. Kennedy, M. Jacob, J. Zhong, "High-resolution MRS in the presence of field inhomogeneity via intermolecular double-quantum coherences on a 3T whole-body scanner", Magnetic Resonance in Medicine, Jan 2010.
60. M. Jacob, "Optimized least square non uniform fast Fourier transform (OLS-NUFFT)", IEEE Transactions of Signal Processing, vol. 57, issue 6, pp. 2165-2177, Feb 2009
61. R. Frazin, M. Jacob, M. Wakin, H. Morgan, "Toward reconstruction of coronal mass ejection density from only three points of view", Astrophysical Journal, April 2009, pp 636-641.
62. M. Jacob, B. Sutton, "Algebraic decomposition of water and fat in MRI", IEEE Transactions of Medical Imaging, Feb 2009, pp 173-84.
63. M. Jacob, X. Zhu, A. Ebel, N. Schuff, and Z.P. Liang, "Improved model-based magnetic resonance spectroscopic imaging", IEEE Transactions of Medical Imaging, Oct 2007, 1305-18.
64. I. Khalidov, D. Van De Ville, M. Jacob, F. Lazeyras, M. Unser, "BSLIM: Spectral localization by imaging with explicit B0 field inhomogeneity compensation", IEEE Transactions on Medical Imaging, Feb 2007, 990-1000.
65. N. Cao, A. Neharoi, M. Jacob, "Image reconstruction for diffuse optical tomography using sparsity regularization and expectation-maximization algorithm", Optics Express, 2007, pp 13695-13708
66. M. Jacob, Y. Bresler, V. Toronov, X. Zhang, and A. Webb, "A level-set algorithm for the reconstruction of functional activation in near-infrared spectroscopic imaging", Journal of Biomedical Optics, Dec 2006, 064029.
67. A. Amzallag, C. Vaillant, M. Jacob, M. Unser, J. Bednar, J.D. Kahn, J. Dubochet, A. Stasiak, J.H. Maddocks, "3D reconstruction and comparison of shapes of DNA minicircles observed by cryo-electron microscopy, Nucleic Acids Res, Sept. 2006.
68. M. Jacob, T. Blu, C. Vaillant, J. Maddocks and M. Unser, "3-D shape estimation of DNA from stereo cryo-electron micrographs using a projection-steerable snake", IEEE Transactions on Image Processing, 214-27, Jan 2006.
69. M. Jacob, M. Unser, "Design of steerable filters for feature detection using Canny-like criterion", IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 26, no. 8, pp. 1007-1019, Aug. 2004.
70. E. Meijering, M. Jacob, J. C. F. Sarría, P. Steiner, H. Hirling and M. Unser, "Design and validation of a tool for neurite tracing and analysis in fluorescence microscopy", Cytometry, vol. 58A, no. 2, pp. 167-176, April 2004.

71. M. Jacob, T. Blu, M. Unser, "Efficient energies and algorithms for parametric snakes", IEEE Transactions on Image Processing, vol. 13, no. 9, pp. 1231-1244, Sep. 2004.
72. M. Jacob, T. Blu, M. Unser, "Sampling of Periodic Signals: A Quantitative Error Analysis", IEEE Transactions on Signal Processing, vol. 50, no. 5, pp. 1153-1159, May 2002.
73. M. Jacob, T. Blu, M. Unser, "An Exact Method for Computing the Area Moments of Wavelet and Spline Curves, IEEE Transactions on Pattern Analysis and Machine Intelligence", vol. 23, no. 6, pp. 633-642, June 2001.

PEER REVIEWED CONFERENCE PAPERS (15/99)

1. Q. Zou, A. Ahmed, P. Nagpal, S. Kruger, M. Jacob, Deep Generative SToRM model for dynamic imaging, ISBI 2021
2. A Pramanik, M. Jacob, Reconstruction and Segmentation of parallel MRI Data using Image Domain Deep SLR, ISBI 2021
3. A. Ahmed, P. Nagpal, S. Kruger, M. Jacob, Dynamic Imaging using Deep Bilinear Unsupervised Learning, ISBI 2021
4. H.K. Aggarwal, A. Pramanik, M. Jacob. ENSURE: Ensemble Stein's Unbiased Risk Estimator for Unsupervised Learning, ICASSP 2021
5. H.K. Aggarwal, M. Jacob, Model Adaptation for Image Reconstruction using Generalized Stein's Unbiased Risk Estimator, ICIP, Submitted 2021
6. A. H. Ahmed, H. K. Aggarwal, P. Nagpal, M. Jacob, Dynamic MRI using Deep Manifold Self-Learning, IEEE ISBI 2020
7. M. Mani, S. Ghosh, H. K. Aggarwal, M. Jacob, Model-Based Deep Learning for Reconstruction of Joint K-Q Under-sampled high resolution diffusion MRI, IEEE ISBI 2020
8. H.K. Aggarwal, M. Jacob, Joint Optimization of Sampling Pattern and Priors in Model-Based Deep Learning, IEEE ISBI 2020
9. A. Pramanik, H. K. Aggarwal, M. Jacob, Calibrationless Parallel MRI using Model-Based Deep Learning (C-MODL), IEEE ISBI 2020
10. A. Pramanik, H. K. Aggarwal, M. Jacob, Off-the-grid Model-Based Deep Learning (O-MODL), IEEE ISBI 2019
11. H.K. Aggarwal, M. P. Mani, M. Jacob, Multi-Shot Sensitivity-Encoded Diffusion MRI using Model-Based Deep Learning (MODL-MUSSELS), ISBI 2019
12. Y. Mohsin, S. Poddar, B. Thattayilath, D. Ansah, and M. Jacob, Navigator-less manifold recovery of cardiac data using iterative SToRM, ISMRM-ESMRMB Conference, Paris, France 2018.
13. S. Poddar, M. Jacob, Recovery of Noisy Points on Band-limited Surfaces: Kernel Methods Re-explained, ICASSP 2018
14. S. Poddar, M. Jacob, Clustering of Data with Missing Entries, ICASSP 2018.
15. S. Biswas, H.K. Aggarwal, S. Poddar, and M. Jacob, Model-based free-breathing cardiac MRI reconstruction using deep learned & STORM priors: MoDL-STORM, ICASSP 2018.
16. S. Poddar, M. Jacob, Recovery of Point Clouds on Surfaces: Application to Image Reconstruction, ISBI 2018.
17. Y. Hu, X. Liu, M. Jacob, Adaptive structured low-rank algorithm for MR image recovery, ISBI 2018.
18. H.K. Aggarwal, M. Mani, and M. Jacob, Model Based Image Reconstruction using Deep Learned Priors (MoDL), ISBI 2018.
19. I. Bhattacharya, M. Jacob, Denoising and Deinterleaving of EPSI Data using Structured low-Rank Matrix Recovery, ISBI 2018
20. H.K. Aggarwal, M. Mani, and M. Jacob, MoDL: Model based Deep Learning Architecture for Image Recovery with Prior Information, ISMRM 2018
21. Yasir Mohsin, Sunrita Poddar, Bijoy Thattaliyath, Ansah Diedra, Xiaoming B, Dingxin Wang and Mathews Jacob, Calibration-free manifold recovery for free breathing & ungated Cardiac MR Imaging, ISMRM workshop 2017, New York City, NY, USA.
22. A. Parekh, S. Poddar, X. Bi, D. Wang, M. Jacob, Free-breathing and Ungated cine MRI using joint smoothness regularization on image and patch manifolds, ISMRM 2017, Honolulu, USA.
23. I. Bhattacharya, R. Noeske, B. Yang, R. Schulte, M. Jacob, High Resolution MRSI using compartmental low rank algorithm: demonstration using undersampled EPSI, Proc. ISMRM 2017, Honolulu, USA.
24. M. Mani, S. Poddar, V. Magnotta, M. Jacob, Trajectory Correction of Radial Data Using MUSSELS, Proc. ISMRM, 2017.
25. C. Cui, A. Shah, X. Wu, M. Jacob, A novel method for Rapid 3D fat and water decomposition using a Globally Optimal multi-surface Estimation (R-GOOSE), ISMRM 2017, Honolulu, USA.
26. M. Mani, A. Guidon, B. Yang, V. Magnotta, M. Jacob, Self-Calibrated Non-Cartesian Multi-shot Diffusion Imaging, Proc. ISMRM, 2017.

27. M. Mani , M. Jacob , B. Yang , V. Magnotta, Comprehensive Correction of Motion and Nyquist Ghost Artifacts for Multi-shot Diffusion Imaging, Proc. ISMRM, 2017.
28. S.Poddar, X.Bi, D.Wang, M.Jacob, A Calibration-less approach to free-breathing ungated cardiac MRI, Proc. ISMRM 2017, Honolulu, USA.
29. M. Mani , M. Jacob , B. Yang , V. Magnotta, High Resolution Multi-shot Diffusion Imaging at 7T without Navigators, Proc. ISMRM, 2017.
30. A. Balachandrasekaran, M. Jacob, Novel annihilation filter framework for accelerated parameter mapping, Proc. ISMRM 2017, Honolulu, Hawaii.
31. M. Mani , M. Jacob , B. Yang , V. Magnotta, Comparison of MUSSELS vs MUSE for Multi-Shot Diffusion Imaging, Proc. ISMRM, 2017.
32. A. Balachandrasekaran, G. Ongie and M. Jacob, Continuous domain compressed sensing (CD-CS): application to accelerated dynamic MRI, ISMRM 2017, Honolulu, Hawaii.
33. A. Balachandrasekaran, M. Jacob, Novel Structured Low-rank algorithm to recover spatially smooth exponential image time series, IEEE ISBI, Melbourne, Australia, 2017.
34. C. Cushing, I. Bhattacharya, R. Noeske, W. Kearney, B. Yang, M. Jacob, V. Magnotta, Comparison of Undersampling Schemes for in-vivo COSY and j-resolved Spectroscopy at 7T, 58th Experimental Nuclear Magnetic Resonance Conference, Asilomar Conference Grounds, Pacific Grove, California.
35. M. Mani, V. Magnotta, D. Kelley, M.Jacob, Comprehensive reconstruction of multishot multichannel diffusion MRI data using MUSSELS, Engineering in Biology and Medicine Conference, 2016.
36. G. Ongie, S. Biswas, M. Jacob, Structured matrix recovery of piecewise constant signals with performance guarantees, International Conference on Image Processing, 2016.
37. A. Balachandrasekaran, G. Ongie, M. Jacob, Accelerated dynamic MRI using structured matrix completion, International Conference on Image Processing, 2016.
38. S. Poddar, M. Jacob, Convex clustering and recovery of partially observed data, International Conference on Image Processing, 2016.
39. Y. Hu, M. Jacob, Multiple degree total variation for image restoration, International Conference on Image Processing, 2016
40. M. Mani, V. Magnotta, D. Kelley, M. Jacob, Comprehensive reconstruction of multishot multichannel diffusion data using MUSSELS, Annual Conference of IEEE Engineering in Biology and Medicine Society (EMBC), 2016.
41. I. Bhattacharya, M. Jacob, Low-rank based compartmentalized reconstruction algorithm for high resolution MRSI without lipid suppression methods, International Society for Magnetic Resonance in Medicine (ISMRM), Singapore, May 2016.
42. S Bhave, S Lingala, J Newell, S Nagle, M Jacob, "Clinical Evaluation of Respiratory Mechanics using accelerated dynamic 3D free breathing MRI reconstruction". International Society for Magnetic Resonance in Medicine (ISMRM), Singapore, May 2016.
43. H Heo, S Bhave, M Jacob, J Zhou, "Blind Compressed sensing based ultrafast Chemical Exchange Saturation Transfer (CEST) Imaging", International Society for Magnetic Resonance in Medicine (ISMRM), Singapore, May 2016.
44. M. Mani, M. Jacob, D. Kelley, V. Magnotta. Under-sampled multi-shot diffusion data recovery using total variation regularized structured low-rank matrix completion (TV-MUSSELS). International Society for Magnetic Resonance in Medicine; 2016.
45. M. Mani, M. Jacob, D. Kelley, V. Magnotta. Multi-shot sensitivity encoded diffusion data recovery using structured low-rank matrix completion (MUSSELS), International Society for Magnetic Resonance in Medicine; 2016.
46. C. Chen, A. Shah, X. Wu, C. Cushing, V. Magnotta. A Fast and Globally Optimal 3-D Graph Search Algorithm for Phase Unwrapping in MRI with Applications in Quantitative Susceptibility Mapping (QSM), International Society for Magnetic Resonance in Medicine; 2016.
47. I. Bhattacharya, M. Jacob, Compartmentalized low-rank regularization with orthogonality constraints for high resolution MRSI, ISBI, Prague, Czech Republic, 2016.
48. I. Bhattacharya, M. Jacob, Fast Data Acquisition and Reconstruction Methods for lipid unsuppressed Metabolic imaging, ISMRM workshop on Data Sampling and Image Reconstruction, Sedona, Arizona, Jan 2016.
49. G. Ongie, M. Jacob, A fast algorithm for structured low rank matrix recovery with applications to undersampled MRI reconstruction, ISBI, Prague, Czech Republic, 2016.
50. S.G. Lingala, Y.Mohsin, S. Bhave, X.Miao, Y.Guo, K.S. Nayak, E. DiBella, M. Jacob, "Data-adaptive reconstruction algorithms for accelerated dynamic MRI: an open-source MATLAB package." ISMRM workshop on Data Sampling and Image Reconstruction, Sedona, Arizona, Jan 2016.
51. S. Biswas, S. Dasgupta, M. Jacob, R. Mudumbai, Spark under 2 D Fourier Sampling, EUSIPCO, Nice, France, 2015.
52. G. Ongie, M. Jacob, Recovery of piecewise smooth images from few Fourier samples, Sampling Theory and Applications (SampTA), Washington D.C., 2015.
53. Y. Mohsin, S.G. Lingala, E Dibella, M Jacob, Motion compensated free breathing myo-cardial perfusion MRI using iterative non-local shrinkage, ISMRM, Toronto, Canada, 2015

54. S. Bhave, S.G. Lingala, A Comellas, J Newell, M Jacob, Dynamic 3D- MRI of the whole lung using constrained reconstruction with learned dictionaries, ISMRM, Toronto, Canada, 2015
55. S. Bhave, S.G. Lingala, C.P. Johnson, V.A. Magnotta, M. Jacob, Whole brain multi-parameter mapping using dictionary learning, ISMRM Toronto Canada, 2015.
56. I.Bhattacharya, M.Jacob, High Resolution 1H MRSI Without Lipid Suppression at short echo times using variable density spirals, ISMRM, Toronto, Canada, 2015.
57. S.Poddar, J.Newell, M.Jacob, Free breathing CINE with Low Rank aided Manifold smoothness Regularization, ISMRM, Toronto, Canada, 2015.
58. M. Mani, M. Jacob, V. Magnotta, Diffusion Imaging Of Head And Neck At High Angular And Spatial Resolution Using Multi-Shot Spirals, ISMRM, Toronto, Canada, 2015.
59. G. Ongie, M. Jacob, Super-resolution MRI using finite rate of innovation curves, IEEE ISBI, New York City, USA, 2015.
60. A. Balachandrasekaran, M. Jacob, Accelerated dynamic MRI using self expressiveness prior, IEEE ISBI, New York City, USA, 2015.
61. S. Poddar, M. Jacob, Low rank recovery with manifold smoothness prior: theory and application to accelerated MRI, IEEE ISBI, New York City, USA, 2015.
62. S. Biswas, S. Poddar, S. Dasgupta, R. Mudumbai, M. Jacob, Two step recovery of jointly sparse and low-rank matrices: theoretical guarantees, IEEE ISBI 2015, in press
63. H.K. Achanta, S. Dasgupta, M. Jacob, B.N. Dasgupta, R. Mudumbai, Coprime conditions for Fourier Sampling for Sparse recovery, A Coruna, Spain, 2014.
64. S. Biswas, S. Poddar, S. Dasgupta, R. Mudumbai, M. Jacob, Subspace based low rank and joint sparse matrix recovery, Asilomar, Pacific Grove, USA, 2014
65. S. Bhave, S. G. Lingala, M. Jacob, A variable splitting based algorithm for Fast Multi-coil Blind Compressed sensing MRI Reconstruction, EMBC, Chicago, USA, 2014.
66. Y. Mohsin, G. Ongie, M.Jacob, "Accelerated MRI using iterative non-local shrinkage", EMBC, Chicago, USA, 2014.
67. Y. Mohsin, Z. Yang, S.G.Lingala, M.Jacob, "Motion compensated dynamic imaging without explicit motion estimation", ISMRM, Milan, Italy, 2014.
68. M. Mani, M. Jacob, V. Magnotta, M.Jacob, "Fast motion compensated ODF reconstruction from undersampled multichannel non-Cartesian MRI diffusion imaging data ", ISMRM, Milan, Italy, 2014.
69. C. Cui, X. Wu, J. Newell, M. Jacob, "3D Globally Optimal Surface Estimation (3D-GOOSE) algorithm for fat and water separation", ISMRM, Milan, Italy, 2014.
70. S.Poddar, S.G.Lingala, M.Jacob, "Real Time Cardiac MRI using Manifold Sensing", ISMRM, Milan, Italy, 2014.
71. S.G. Lingala, Y.Mohsin, J.Newell, J.Sieren, D.Wang, D.Thepens, M.Jacob, "Towards 3D dynamic MRI of the lung using blind compressed sensing", ISMRM, Milan, Italy, 2014.
72. S. Poddar, S.G. Lingala, M. Jacob, "Joint recovery of undersampled signals on a manifold: application to free breathing MRI", ICASSP, Florence, Italy, 2014.
73. G. Ongie, Y. Hu, M. Jacob, Higher Degree Total Variation for 3-D Image Recovery, ISBI 2014, China.
74. S. Bhave, Jinsuh Kim, C. P. Johnson, M. Jacob, Accelerated CEST MRI using Compressive Sensing and Multi-shot Spiral Acquisitions, ISMRM, Salt Lake city, Utah, April 2013
75. S. G. Lingala, E.DiBella, M. Jacob, Accelerated myocardial perfusion MRI using motion compensated compressed sensing (MC-CS), ISMRM, Salt lake city, Utah, April 2013.
76. S. G. Lingala, M. Jacob, Blind compressed sensing with sparse dictionaries for accelerated dynamic MRI, IEEE ISBI, San Francisco, April 2013.
77. S. G. Lingala, M. Jacob, A blind compressed sensing framework for dynamic MRI, IEEE ISBI, Barcelona, May 2012
78. Y. Hu, M. Jacob Improved higher degree total variation regularization, IEEE ISBI, Barcelona, May 2012
79. Z. Yang, M. Jacob Robust non-local regularization framework for motion compensated dynamic imaging without explicit motion estimation, IEEE ISBI, Barcelona, May 2012
80. M. Mani, M. Jacob, A. Guidon, C. Liu, A. Song, V. Magnotta, J. Zhong Acceleration of high angular and spatial resolution diffusion imaging using compressive sensing, IEEE ISBI, Barcelona, May 2012
81. M. Mani, M. Jacob, A. Guidon, V. Magnotta, J.Zhong, Accelerating non-Cartesian SENSE for large coil arrays, application to motion compensation in multi-shot DWI, IEEE ISBI, Barcelona, May 2012
82. R.Eslami, M. Jacob, "A sparse reconstruction algorithm for parallel spiral MR spectroscopic imaging", IEEE ISBI, Chicago, April 2011.
83. S.G. Lingala, Y. Hu, E. DiBella, M. Jacob, "Accelerated first pass cardiac perfusion MRI using improved k-t SLR", IEEE ISBI, Chicago, April 2011.
84. Z.Yang, M. Jacob, "A unified energy minimization framework for nonlocal regularization", IEEE ISBI, Chicago", April 2011.

85. S.G. Lingala, M. Nadar, C. Ched'hotel, Li Zhang, M. Jacob, "Unified reconstruction and motion estimation in cardiac perfusion MRI", IEEE ISBI, Chicago, April 2011.
86. Y. Hu, M. Jacob, "Image recovery using improved total variation regularization", IEEE ISBI, Chicago, April 2011.
87. S.G. Lingala, Y. Hu, M. Jacob, "Real-time cardiac MRI using low-rank and sparsity penalties", IEEE ISBI, Rotterdam", April 2010.
88. K. Satyananda, M. Jacob, "A fast & accurate non-iterative algorithm for regularized non-Cartesian MRI, IEEE ISBI, Rotterdam", April 2010.
89. R. Eslami, M. Jacob, "Spatial Spectral Modeling for Robust MRSI, IEEE EMBS, Minneapolis", Sept 2009.
90. R. Eslami, M. Jacob, "Reduction of distortions in MRSI using a new signal model", IEEE international symposium on biomedical imaging, 2009.
91. Z. Yang, M. Jacob, "Efficient NUFFT algorithm for non-Cartesian MRI reconstruction", IEEE international symposium on biomedical imaging, 2009.
92. M. Jacob, "Optimized non-uniform fast Fourier transform (NUFFT) for iterative tomographic reconstruction", IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2009.
93. R. Eslami, M. Jacob, "Correction of B0 inhomogeneity distortion in magnetic resonance spectroscopic imaging", IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2009.
94. M. Jacob, H. Le-houllier, S. Bora, S. McAleavey, D. Dalecki, J. McDonough, "The use of speckle tracking for the recovery of displacement and velocity information from sequences of ultrasound images of the tongue", International Seminar on Speech Production, Proceedings of ISSP 2008.
95. R. Shankar, T. Gu, J. Zhong, M. Jacob, "Improved IDQC reconstruction for inhomogeneity corrected MR spectroscopy", IEEE International Symposium on Biomedical Imaging, Proceedings of ISBI 2008.
96. M. Jacob, B. Sutton, "Non-iterative decomposition of fat and water", IEEE International Symposium on Biomedical Imaging, Proceedings of ISBI 2007.
97. R. Morrice, M. Jacob, M. Do, "Multichannel estimation of coil sensitivities in parallel MRI", IEEE International Symposium on Biomedical Imaging, Proceedings of ISBI 2007
98. M. Jacob, B. Sutton, "Non-iterative decomposition of fat and water using chemical shift", Proceedings of the ISMRM, 2007, in press
99. M. Jacob, V. Toronov, A. Webb and Y. Bresler, "A new level-set algorithm for the diffuse optical imaging of the brain", Proceedings of the SPIE: Photonics West (2006)
100. M. Jacob, B. Sutton, J. Haldar, Z.P. Liang, "On Model Based Spectroscopic Imaging", Proceedings of the IEEE International Symposium on Biomedical Imaging (ISBI'06).
101. M. Jacob, V. Toronov, Y. Bresler, X. Zhang, A. Webb, "Reconstruction of functional activations in diffuse optical imaging", Proceedings of the ISBI 2006.
102. J. Haldar, M. Jacob, A. Ebel, X. Zhu, N. Schuff, B. Sutton, Z.P. Liang, "Regularized inversion of noisy, incomplete MR spectroscopic imaging data with anatomical prior", Proceedings of the IEEE International Symposium on Biomedical Imaging, 2006
103. M. Jacob, B. Sutton, J. Haldar, Z.P. Liang, "Improved spectroscopic imaging using echo-planar scans and sparse reconstruction", Proceedings of the ISMRM, 2006.
104. J. Haldar, M. Jacob, A. Ebel, X. Zhu, N. Schuff, B. Sutton, Z.P. Liang, "Constrained spectroscopic imaging with hard and soft anatomical boundary constraints", Proceedings of the ISMRM, 2006.
105. I. Khalidov, D. Van De Ville, M. Jacob, F. Lazeyras, M. Unser, "Improved MRSI with Field Inhomogeneity Compensation," Proceedings of the SPIE: International Symposium on Medical Imaging: Image Processing, 2006.
106. F. Aguet, M. Jacob, M. Unser, "Three-Dimensional Feature Detection Using Optimal Steerable Filters", Proceedings of the 2005 IEEE International Conference on Image Processing (ICIP'05), Genova, Italy, September 11-14, 2005, pp. II-1158-II-1161 .
107. D. Xu, M. Jacob, Z. P. Liang, "Optimal sampling of k-space on Cartesian grids for parallel imaging", Proceedings of ISMRM 2005, Miami, Florida
108. D. Xu, L. Ying, M. Jacob, Z. P. Liang, "Optimizing SENSE for Dynamic Imaging", Proceedings of ISMRM 2005, Miami, Florida.
109. M. Jacob, T. Deller, X. Zhu, Z. P. Liang, "High-resolution spectroscopic imaging using a deformable spatial spectral model", Proceedings of ISMRM 2005,
110. M. Jacob, D. Xu, Z.P. Liang, "Optimal Selection of Phase Encodings in Parallel MR Imaging", Second International Workshop on Parallel MRI, ETH Zurich, Switzerland, 15-17 October 2004
111. M. Jacob, T. Blu, M. Unser, "Shape estimation of 3-D DNA molecules from stereo cryo-electron micro-graphs", Accepted for publication at Proceedings of the International Conference on Image Processing, Singapore, October 2004.
112. E. Meijering, M. Jacob, J-C. F. Sarria, M. Unser, "Neurite Tracing in Fluorescence Microscopy Images using Ridge Filtering and Graph Searching: Principles and Validation", Proceedings of ISBI, 2004, pp. 1219-1222.

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114. M. Jacob, M. Unser,"Optimal steerable filters for feature detection", Proceedings of the International Conference on Image Processing 2003, September 14-17.
115. M. Jacob, T. Blu, M. Unser,,"3-D reconstruction of DNA filaments from stereo cryo-electron micrographs ", Proceedings of the First 2002 ISBI 2002, vol.II, pp. 597-600.
116. M. Feilner, M. Jacob, M. Unser,"Orthogonal Quincunx Wavelets with Fractional Orders ", Proceedings of the 2001 IEEE International Conference on Image Processing, October 7-10, 2001, vol. I, pp. 606-609.
117. M. Jacob, T. Blu, M. Unser,"A Unifying Approach and Interface for Spline-Based Snakes ", Proceedings of the SPIE International Symposium on Medical Imaging: Image Processing, February 17-22, 2001, vol. 4322, Part I, pp. 340-347.
118. M. Jacob, T. Blu, M. Unser,"An Error Analysis for the Sampling of Periodic Signals", Proceedings of the Fourth International Conference on Sampling Theory and Applications (SampTA'01), 2001, pp. 45-48.
119. M. Jacob, T. Blu, M. Unser,"Exact Computation of Area Moments for Spline and Wavelet Curves",Proceedings of the Fifteenth International Conference on Pattern Recognition (ICPR'00), Barcelona, Spain, September 3-8, 2000, vol. III, pp. 131-134.

INVITED TALKS

1. Model based Unsupervised Deep Learning, Texas Austin, 2021
2. Ultrahigh-resolution MRI using Model based Unsupervised Deep Learning, TEQUIP III sponsored Online International Symposium on Medical Imaging, Nagpur, India, 2021
3. Computational MRI: From structured low-rank methods to model based deep learning, Stanford University, 2020
4. Computational Imaging: From structured low-rank methods to model based deep learning, Computational Imaging Workshop, 2019
5. Dynamic MRI using Manifold regularization ISMRM, 2017
6. Structured low-rank algorithms, theory, algorithms, and applications to MRI, Wavelets & Sparsity, XV, 2017
7. Advances in model based dynamic imaging, Gordon Research Conference on Image Science, 2016
8. Model based dynamic imaging, Biomedical Engineering, Carnegie Mellon University, 2016
9. Super-resolution recovery of images, SPIE Conference on Optics & Photonics: Wavelets and Sparsity XIV, San-Diego, April 2015.
10. Model based algorithms for image recovery, Iowa State University, 2014
11. Adaptive algorithms for dynamic imaging, SIAM annual meeting, 2013
12. Accelerated Dynamic MRI, EPFL, Lausanne, Switzerland, 2013
13. Accelerated Dynamic MRI, University of Geneva, 2013
14. Adaptive algorithms for dynamic MRI, KAIST, South Korea, 2013
15. Signal Processing methods for MRI, Inverse Problems, South Korea, 2013
16. Accelerated perfusion MRI using k-t SLR, SPIE Conference on Optics & Photonics: Wavelets and Sparsity XIV, San-Diego, April 2011.
17. Biomedical image recovery using higher degree total variation (HDTV) regularization, SPIE Conference on Optics & Photonics: Wavelets and Sparsity XIV, San-Diego, April 2011.
18. kt-SLR: a novel scheme for accelerated dynamic MR imaging, ECE Department, IISc Bangalore and IEEE SP Bangalore Chapter, Bangalore, India, Sept 2010
19. Accelerated dynamic MR imaging using kt-SLR, NIT Calicut Golden Jubilee celebration, Inaugural lecture, Calicut, India Sept 2010.
20. Accelerated dynamic MR imaging using kt-SLR, Cornell Medical Center, NY, July 2010.
21. kt-SLR: a novel scheme for accelerated dynamic MR imaging, Siemens Corporate Research, Princeton, NJ, 2010.
22. Robust reconstruction of MRSI data using high-resolution MRI priors, EMBC, Minneapolis, 2009.
23. Model based MR spectroscopic imaging, Asilomar Conference on Signals, Systems, and Computers, 2008.
24. M. Jacob, "Model based algorithms for Biomedical Imaging" in IEEE-EMBS summer school on Biomedical Imaging, 2008.

RESEARCH SUPPORT

Current

1 R01 AG067078-01A1 Jacob(PI)

1/1/21-1/31/25

Agency: NIH/NIA

Total Costs: \$3,74,000

Title: Model Based Deep Learning Framework for Ultra-High-Resolution Multi-Contrast MRI

1R01EB019961-01A1 Jacob (PI)

04/2016 - 03/2021

Agency: NIH/NIBIB
Total Costs: 2,144,993
Title: Novel Computational Framework for Free-Breathing & Ungated Dynamic MRI

R01 EB019961-02S1 **Jacob(PI)** 4/1/17-3/31/19
Agency: NIH/NIBIB
Total Costs: \$152,000
Title: High-resolution acidosis biomarker in early Alzhiemers disease (Administrative Supplement)

R01 EB019961-02S2 **Jacob(PI)** 4/1/17-3/31/19
Total Costs: \$354,000
Title: High-Resolution J-Resolved MRSI for Metabolic Imaging in Alzhiemers disease (Administrative Supplement)

ONR: 11231001 **Jacob(PI)**
01/2013-12/2017
Agency: Office of Naval Research
Total Costs: \$875,000
Title: CIF: Multi-Image Co-prime Sensing: Theory and Applications to MRI

1 R01 EB022019-01A1 **Magnotta (PI)** 04/2016 - 03/2020
Agency: NIH/NIBIB
Title: Characterization and Enhancement of Functional T1rho Imaging

Completed

CCF: 1116067 **Jacob(PI)** 08/2011 – 07/2016
Agency: NSF/CCF
Total Costs: \$433,897
Title: CIF: Adaptive signal representation for accelerated multidimensional imaging

RSG-11-267-01-CCE **Jacob(PI)** 01/2011-07/2016
Agency: American Cancer Society
Total Costs: \$720,000
Title: Improved MR spectroscopic imaging for glioma treatment planning

DMS 1557593 **Jacob(PI: Iowa component)** 01/2016-12/2016
Agency: National Science Foundation
Total Costs: \$100,000
Title: QuBBD: Collaborative Proposal: Interactive Ensemble Clustering for Mixed Data with Application to Mood Disorders

Univ. Iowa, Aging of the Brain & Mind (**PIs: Voss & Jacob**) 1/16-1/17
Direct Costs: \$25,000
Title: Probing the molecular mechanisms in cognitive aging & protective factors with novel quantitative MR imaging

1R21HL109710-01A1 **Jacob(PI)** 01/2012-12/2013
Agency: NIH/NHLBI
Total Costs: \$427,611
Title: Novel algorithm for contrast enhanced myocardial perfusion MRI

CCF-0844812 **Jacob (PI)** 07/2009 - 06/2014
Agency: National Science Foundation
Total Costs: \$399,600
Title: CAREER: Efficient Image Sparsifying Operators: Theory, Algorithms and Applications