MEHMET AKÇAKAYA, PH.D.

Department of Electrical and Computer Engineering
University of Minnesota – Twin Cities
200 Union St S.E., Keller Hall, Rm. 5-159
Minneapolis, MN 55455

Phone: (612) 625-1343
Fax: (612) 625-4583
Email: akcakaya@umn.edu
Web: http://akcakaya.umn.edu

ACADEMIC APPOINTMENTS

University of Minnesota — Minneapolis, MN, USA
Associate Professor, Department of Electrical and Computer Engineering — 2020-present
Assistant Professor, Department of Electrical and Computer Engineering — 2015-2020
Faculty, Center for Magnetic Resonance Research

Harvard Medical School (Beth Israel Deaconess Medical Center) — Boston, MA, USA
Instructor, Department of Medicine (Cardiovascular Division) — 2012-15

Harvard Medical School (Beth Israel Deaconess Medical Center) — Boston, MA, USA
Post-doctoral Research Fellow, Department of Medicine (Cardiovascular Division) — 2010-12
Mentors: Dr. Reza Nezafat and Dr. Warren J. Manning

EDUCATION

Harvard University — Cambridge, MA, USA
Ph. D. in Engineering Sciences — 2005-10
S. M. in Applied Mathematics
PhD Thesis: An Information Theoretic Approach to Compressed Sensing and Its Utility in Magnetic Resonance Imaging
Advisor: Dr. Vahid Tarokh

McGill University — Montreal, QC, Canada
B. Eng. In Electrical Engineering (Honours) with Great Distinction — 2001-05
Minor in Computer Science
GPA: 3.99/4.00, Concentration: Telecommunications
Thesis: Iterative Maps, Nonlinear Dynamics, and Performance Evaluation for Turbo Codes

SELECTED HONORS AND AWARDS

Jim and Sara Anderson Professorship	University of Minnesota	2022
Guillermo E. Borja Award	University of Minnesota	2020
Best Paper Award	IEEE ISBI	2020
Trailblazer Award	NIH (NIBIB)	2020
Fellow	SCMR	2018
McKnight Land-Grant Professorship Award	University of Minnesota	2018
CAREER Award	NSF	2017
R00 Career Development Award	NIH (NHLBI)	2015
Junior Fellow	ISMRM	2013
Early Career Award Finalist (Basic Science Research)	SCMR	2012
Early Career Award Finalist (Basic Translational Research)	SCMR	2012
Regional Scholarship	SCMR	2012
I. I. Rabi Young Investigator Award Finalist	ISMRM	2011
Travel Award	ISMRM	2010-11, 13
John Parker Bequest Fellowship	Harvard University	2008
GSAS Merit Fellowship	Harvard University	2008
Certificate of Distinction in Teaching	Harvard University	2006
Herbert S. Winokur, Jr. Fellowship in Decision Sciences	Harvard University	2006

School of Engineering and Applied Sciences Fellowship	Harvard University	2005
Charles Michael Morssen Gold Medal	McGill University	2005
Professor Gar Lam Yip Memorial Prize	McGill University	2005
James McGill Award	McGill University	2004
AAPN eMPOWR Research Award	McGill University	2004
Motorola Foundation Scholarship	McGill University	2003
Morris Wilson Scholarship	McGill University	2001-05

RESEARCH FUNDING

NIH NHLBI R01 HL153146 (Akçakaya)
Rapid Comprehensive Cardiac MRI Exam for Diagnosis of Coronary Artery Disease 2020-25
Role: PI

NIH NIBIB R21 EB028369 (Akçakaya)
Novel Quantitative MRI Techniques for Assessment of Cardiac Fibrosis without Gadolinium Contrast 2020-23
Role: PI

NSF CAREER (Akçakaya)
CAREER: Geometric Techniques for Big Data Medical Imaging 2017-22
Role: PI

NIH NIBIB P41 EB027061 (Uğurbil/Metzger)
Technology to realize the full potential of UHF MRI 2019-24
Role: PI for *Image Reconstruction* Core

NIH NIBIB U01 EB025144 (Uğurbil)
Elementary Neuronal Ensembles to Whole Brain Networks 2017-22
Role: Co-Investigator

NIH NHMI R01 MH126923 (Akkin/Heilbronner)
Label-free Optical Imaging of Whole Brain Microconnectivity 2020-25
Role: Co-Investigator

NIH NHLBI R00 HL111410 (Akçakaya) [Completed]
Novel Accelerated Contrast-Enhanced High Resolution Coronary MRI 2015-19
Role: PI

AFOSR AFRL RTA2.5 (Akçakaya) [Completed]
Distributed Learning for Dynamic Large-Scale Datasets 2016-17
Role: PI

DTI Seed Grant (Akçakaya) [Completed]
Sparse Phase Retrieval Algorithms for Bio-Medical Imaging Applications 2016-18
Role: PI

TEACHING EXPERIENCE

1. EE 5940: Medical Imaging Systems	Spring 2016, University of Minnesota
2. EE 5561: Image Processing and Applications	Fall 2016, University of Minnesota
3. EE 3015: Signals & Systems	Spring 2017, University of Minnesota
4. EE 5531: Probability and Stochastic Processes	Fall 2017, University of Minnesota
5. EE 3015: Signals & Systems	Spring 2018, University of Minnesota
6. EE 5561: Image Processing and Applications	Spring 2019, University of Minnesota
7. EE 5531: Probability and Stochastic Processes	Fall 2019, University of Minnesota

8. EE 5561: Image Processing and Applications — Spring 2021, University of Minnesota
9. EE 5561: Image Processing and Applications — Spring 2022, University of Minnesota

JOURNAL PUBLICATIONS (Reverse Chronological)

Submitted/Under Revision

1. K. Hammernik, T. Kustner, B. Yaman, Z. Huang, D. Rueckert, F. Knoll and **M. Akçakaya**, "Physics-Driven Deep Learning for Computational Magnetic Resonance Imaging," submitted.
2. S. Weingärtner, O. B. Demirel, C. Shenoy, L. R. Schad, J. Schulz-Menger and **M. Akçakaya**, "Functional Late Gadolinium Enhancement Imaging," submitted.
3. O. B. Demirel. S. Weingärtner, S. Moeller and **M. Akçakaya**, "Signal Intensity Informed Multi-Coil MRI Encoding Operator for Physics-guided Deep Learning Reconstruction of Highly Accelerated Myocardial Perfusion," submitted.

Published/In press

4. H. Gu, B. Yaman, K. Uğurbil, S. Moeller and **M. Akçakaya**, "Revisiting l_1-wavelet compressed sensing MRI in the era of deep learning," *Proc Natl Acad Sci USA*, 119(33):e2201062119, Aug. 16, 2022.
5. B. Yaman, S. A. Hosseini, S. Moeller, J. Ellermann, K. Uğurbil and **M. Akçakaya**, "Multi-Mask Self-Supervised Learning for Physics-Guided Neural Networks in Highly Accelerated MRI," *NMR in Biomedicine*. 2022;e4798.
6. C. Zhang, S. Moeller, O. B. Demirel, K. Uğurbil and **M. Akçakaya**, "Residual RAKI: A Hybrid Linear and Non-Linear Approach for Scan-Specific k-space Deep Learning," *Neuroimage*, 256:119248; Aug. 2022.
7. **M. Akçakaya**, B. Yaman, H. Chung and J. C. Ye, "Unsupervised Deep Learning Methods for Biological Image Reconstruction and Enhancement," *IEEE Signal Processing Magazine*, vol. 39, no. 2, pp. 28-44, March 2022.
8. L. Vizioli, S. Moeller, L. Dowdle, **M. Akçakaya**, F. De Martino, E. Yacoub and K Ugurbil, "Lowering the Thermal Noise Barrier in Functional Brain Mapping with Magnetic Resonance Imaging," *Nature Communications*, 12(1), pp. 5181, Aug. 30, 2021.
9. I. Hermann, P. Kellman, O. B. Demirel, **M. Akçakaya**, L. R. Schad and S. Weingärtner, "Free-breathing simultaneous T_1, T_2 and T_{2^*} quantification in the myocardium," *Magnetic Resonance in Medicine*, 86(3), pp. 1226-1240, Sept. 2021.
10. O. B. Demirel, S. Weingärtner, S. Moeller and **M. Akçakaya**, "Improved Simultaneous Multislice Cardiac MRI using readout concatenated k-space SPIRiT (ROCK-SPIRiT)," *Magnetic Resonance in Medicine,* 85(6), pp. 3036-3048, June 2021.
11. A. D. Desai, F. Caliva, C. Iriondo, N. Khosravan, A. Mortazi, S. Jambawalikar, D. Torigian, J. Ellerman, **M. Akçakaya**, U. Bagci, R. Tibrewala, I. Flament, M. O'Brien, S. Majumdar, M. Perslev, A. Pai, C. Igel, E. B. Dam, S. Gaj, M. Yang, K. Nakamura, X. Li, C. M. Deniz, V. Juras, R. Regatte, G. E. Gold, B. A. Hargreaves, V. Pedoia, A. S. Chaudhari, "The International Workshop on Osteoarthritis Imaging Knee MRI Segmentation Challenge: A Multi-Institute Evaluation and Analysis Framework on a Standardized Dataset," *Radiology: Artificial Intelligence*, 3:3, 2021.
12. S. Moeller, P. K. Pisharady, S. Ramanna, C. Lenglet, X. Wu, E. Yacoub, K. Uğurbil and **M. Akçakaya**, "NOise Reduction with DIstribution Corrected (NORDIC) PCA in dMRI with complex-valued parameter-free locally low-rank processing," *NeuroImage*, 226:117539, Nov. 10, 2020.
13. B. Yaman, S. A. Hosseini, S. Moeller, J. Ellermann, K. Uğurbil and **M. Akçakaya**, "Self-Supervised Learning of Physics-Guided Reconstruction Neural Networks without Fully-Sampled Reference Data," *Magnetic Resonance in Medicine,* 84(6), pp. 3172-3191, Dec. 2020.
14. S. A. Hosseini, B. Yaman, S. Moeller, M. Hong and **M. Akçakaya**, "Dense Recurrent Neural Networks for Inverse Problems: History-Cognizant Unrolling of Optimization Algorithms," *IEEE Journal on Special Topics in Signal Processing*, 14(6), pp. 1280-1291, Oct. 2020.
15. C. Shenoy, S. Romano, A. Hughes, O. Okasha, P. S. Nijjar, P. Velangi, C. M. Martin, **M. Akçakaya** and A. Farzaneh-Far, "Cardiac Magnetic Resonance Feature Tracking Global Longitudinal Strain and Prognosis After Heart Transplantation," *JACC Cardiovasc Imaging*, 13(9), pp. 193401942, Sep. 2020.
16. S. Moeller, P. K. Pisharady, J. Andersson, **M. Akçakaya**, N. Harel, R. Ma, X. Wu, E. Yacoub, C. Lenglet and K. Uğurbil, "Diffusion Imaging in the Post-HCP Era," *Journal of Magnetic Resonance Imaging*, in press.

17. I. Hermann, T. Uhrig, J. Chacon-Caldera, **M. Akçakaya**, L. Schad and S. Weingärtner, "Towards measuring the effect of flow in blood T_1 assessed in a flow phantom and in vivo," P*hysics in Medicine and Biology*, 65(9):095001, Apr. 28, 2020.
18. R. Ma, **M. Akçakaya**, S. Moeller, E. Auerbach, K. Uğurbil and P.-F. van de Moortele, "Effective Correction of Eddy Current Induced Artifacts in Human Connectome Project-style Multiband Diffusion MRI at 7T Using a Multi-probe Field Monitoring Camera," *NeuroImage*, 216:116861, Aug. 1, 2020.
19. S. Moeller, S. Ramanna, C. Lenglet, P. Pisharady, E. Auerbach, L. DelaBarre, X. Wu, **M. Akçakaya** and K. Uğurbil, "Self-navigation for 3D multi-shot EPI with data-reference," *Magnetic Resonance in Medicine,* 84(5), pp. 1747-1762, Oct. 2020.
20. P. S. Velangi, K. A. Chen, F. Kazmirczak, O. Okasha, L. von Wald, H. Roukoz, A. Farzaneh-Far, J. Markowitz, P. S. Nijjar, M. Bhargava, D. Perlman, **M. Akçakaya** and C. Shenoy, "Right Ventricular Abnormalities on Cardiovascular Magnetic Resonance Imaging in Patients With Sarcoidosis," *JACC Cardiovasc Imaging*, 13(6), pp. 1395-1405, June 2020.
21. S. A. Hosseini, C. Zhang, S. Weingärtner, S. Moeller, M. Stuber, K. Uğurbil and **M. Akçakaya**, "Accelerated Coronary MRI with sRAKI: A Database-Free Self-Consistent Neural Network k-space Reconstruction for Arbitrary Undersampling," *PLoS One,* 15(2):e0229418, Feb 21, 2020.
22. F. Knoll, K. Hammernik, C. Zhang, S. Moeller, T. Pock, D. K. Sodickson and **M. Akçakaya**, "Deep Learning Methods for Parallel Magnetic Resonance Imaging Reconstruction," *IEEE Signal Processing Magazine*, 37(1), pp. 128-140, Jan. 2020.
23. C. Zhang, S. A. Hosseini, S. Weingärtner, S. Moeller, K. Uğurbil and **M. Akçakaya**, "Optimized Fast GPU Implementation of Robust Artificial-neural-networks for k-space Interpolation (RAKI) Reconstruction," *PLoS One*, 14(10):e0223315, Oct. 23, 2019.
24. P. S. Velangi, C. Choo, K. A. Chen, F. Kazmirczak, P. S. Nijjar, A. Farzaneh-Far, O. Okasha, **M. Akçakaya**, J. W. Weinsaft and C. Shenoy, "Long-term Embolic Outcomes after Detection of Left Ventricular Thrombus by Late Gadolinium Enhancement Cardiovascular Magnetic Resonance Imaging: A Matched Cohort Study," *Circulation: Cardiovascular Imaging,* 12(11):e009723, Nov 2019.
25. A. Hughes, O. Okasha, A. Farzaneh-Far, F. Kazmirczak, P. S. Nijjar, P. S. Velangi, **M. Akçakaya**, C. M. Martin and C. Shenoy, "Myocardial Fibrosis and Prognosis in Heart Transplant Recipients," *Circulation: Cardiovascular Imaging*, 12(10):e009060, Oct 2019.
26. S.-W. Chieh, M. Kaveh, **M. Akçakaya** and S. Moeller, "Self-calibrated interpolation of non-Cartesian data with GRAPPA in parallel imaging," *Magnetic Resonance in Medicine,* 83(5):1837-1850, 2020.
27. C. I. Kanatsoulis, X. Fu, N. D. Sidiropoulos and **M. Akçakaya**, "Tensor Completion from Regular Sub-Nyquist Samples," *IEEE Trans. on Signal Processing,* 68(1), pp. 1-16, 2020.
28. B. Yaman, S. Weingärtner, N. Kargas, N. D. Sidiropoulos and **M. Akçakaya**, "Low-Rank Tensor Models for Improved Multi-Dimensional MRI: Application to Dynamic Cardiac T_1 Mapping," *IEEE Trans. on Computational Imaging*, 6(1), pp. 194-207, 2020.
29. **M. Akçakaya**, S. Moeller, S. Weingärtner and K. Uğurbil, "Scan-specific Robust Artificial-neural-networks for k-space Interpolation (RAKI) Reconstruction: Database-free Deep Learning for Fast Imaging," *Magnetic Resonance in Medicine*, 81(1):439-453, Jan. 2019. ***Top 3 Most Downloaded Article in MRM (2018-19)***
30. F. Kazmirczak, P. S. Nijjar, L. Zhang, A. Hughes, K. A. Chen, O. Okasha, C. M. Martin, **M. Akçakaya**, A. Farzaneh-Far and C. Shenoy, "Safety and prognostic value of regadenoson stress cardiovascular magnetic resonance imaging in heart transplant recipients," J Cardiovasc Magn Reson 21(1):9, Jan 24, 2019.
31. S. A. Hosseini, A. Sohrabpour, **M. Akçakaya** and B. He, "Electromagnetic brain source imaging by means of a robust minimum variance beamformer," IEEE Trans Biomed Eng., 65(10):2365-2374, Oct. 2018.
32. L. Q. Lin, F. Kazmirczak, K. A. Chen, O. Okasha, P. S. Nijjar, C. M. Martin, **M. Akçakaya**, A. Farzaneh-Far and C. S. Shenoy, "Impact of Cardiovascular Magnetic Resonance Imaging on Identifying the Etiology of Cardiomyopathy in Patients Undergoing Cardiac Transplantation," *Nature Scientific Reports*, 8(1):16212, Nov. 1, 2018.
33. B. Rieger, **M. Akçakaya**, J. C. Pariente, S. Llufriu, E. Martinez-Heras, S. Weingärtner and L. R. Schad, "Time Efficient Whole-Brain Coverage with MR Fingerprinting using Slice-Interleaved Echo-Planar-Imaging," *Nature Scientific Reports*, 8(1):6667, April 27, 2018 .
34. S. Weingärtner, C. Shenoy, B. Rieger, L. R. Schad, J. Schulz-Menger and **M. Akçakaya**, "TempOrally-resolved Parametric Asssessment of Z-magnetization recovery (TOPAZ): Dynamic Myocardial T_1 Mapping using a Cine Steady-State Look-Locker Approach," *Magnetic Resonance in Medicine*, 79(4):2087-2100, Apr. 2018.

35. G. Wang, L. Zhang, G. B. Giannakis, **M. Akçakaya** and J. Chen, "Sparse Phase Retrieval via Truncated Amplitude Flow," *IEEE Trans. on Signal Processing,* 66(2), pp. 479-491, Jan. 2018.
36. S. Weingärtner, S. Moeller, S. Schmitter, E. Auerbach, P. Kellman, C. Shenoy and **M. Akçakaya**, "Simultaneous Multi-Slice Imaging for Native Myocardial T1 Mapping: Improved Spatial Coverage in a Single Breath-Hold," *Magnetic Resonance in Medicine*, 78(2), pp. 462-471, Aug. 2017.
37. S. Weingärtner, F. Zimmer, G. J. Metzger, K. Uğurbil, P.-F. van de Moortele and **M. Akçakaya**, "Motion-Robust Cardiac B_1^+ Mapping at 3T using Interleaved Bloch-Siegert Shifts," *Magnetic Resonance in Medicine*, 78(2), pp. 670-677, Aug. 2017 .
38. T. A. Basha, **M. Akçakaya**, C. Liew, C. Taso, F. Delling, S. Berg, K. V. Kissinger, B. Goddu, W. J. Manning and R. Nezafat, "Clinical performance of high-resolution late gadolinium enhancement imaging with compressed sensing," *Journal of Magnetic Resonance Imaging*, 46(6):1829-1838, Dec. 2017.
39. S. Weingärtner, N. M. Meßner, F. G. Zöllner, **M. Akçakaya** and L. R. Schad, "Black-Blood Native T1 Mapping: Blood Signal Suppression for Reduced Partial-Voluming in the Myocardium," *Magnetic Resonance in Medicine*, 78(2), pp. 484-493, Aug. 2017.
40. **M. Akçakaya**, S. Weingärtner, T. A. Basha, S. Roujol and R. Nezafat, "Joint Myocardial T_1 and T_2 Mapping Using A Combination of Saturation Recovery and T_2-preparation," *Magnetic Resonance in Medicine*, 76(3), pp. 888-896, Sept. 2016.
41. **M. Akçakaya** and V. Tarokh, "Sparse Signal Recovery from a Mixture of Linear and Magnitude-Only Measurements," *IEEE Signal Processing Letters*, 22(9), pp. 1220-1223, Sept. 2015.
42. S. Roujol, T. A. Basha, S. Weingärtner, **M. Akçakaya**, S. J. Berg, W. J. Manning and R. Nezafat, "Impact of Motion Correction on Reproducibility and Spatial Variability of Quantitative Myocardial T_2 Mapping," *Journal of Cardiovascular Magnetic Resonance*, 17:46, 2015.
43. **M. Akçakaya**, T. A. Basha, S. Weingärtner, S. Roujol, S. Berg and R. Nezafat, "Improved Quantitative Myocardial T_2 Mapping," *Magnetic Resonance in Medicine*, 74(1), pp. 93-105, July 2015.
44. T. A. Basha, **M. Akçakaya**, B. Goddu, S. Berg and R. Nezafat, "Accelerated 3D Cine Phase Contrast Imaging using Randomly Undersampled Echo Planar Imaging with Compressed Sensing Reconstruction," *NMR in Biomedicine*, 28(1), pp. 30-39, Jan. 2015.
45. **M. Akçakaya**, S. Nam, T. A. Basha, K. Kawaji, V. Tarokh and R. Nezafat, "An Augmented Lagrangian Based Compressed Sensing Reconstruction for Non-Cartesian Magnetic Resonance Imaging without Gridding and Regridding at Every Iteration," *PLoS ONE*, 9(9):e107107, Sept. 12, 2014.
46. S. Weingärtner, **M. Akçakaya**, S. Roujol, T. A. Basha, C. Tschabrunn, S. Berg, E. Anter and R. Nezafat, "Free-breathing Combined 3D Late Gadolinium Enhancement and T1 Mapping for Myocardial Tissue Characterization," *Magnetic Resonance in Medicine*, 74(4), pp. 1032-1041, Oct. 2015.
47. S. Roujol, M. Foppa, T. A. Basha, **M. Akçakaya**, B. Goddu, S. Berg and R. Nezafat, "Highly Accelerated Free-Breathing ECG-Triggered Contrast-Enhanced Pulmonary Vein MRA," *Journal of Cardiovascular Magnetic Resonance*, 16:91, 2014.
48. K. Kawaji, M. Foppa, S. Roujol, **M. Akçakaya** and R. Nezafat, "Whole Heart Coronary Imaging with Flexible Acquisition Window and Trigger Delay," *PLoS ONE*, 10(2):e0112020, Feb. 26, 2015.
49. **M. Akçakaya**, S. Weingärtner, S. Roujol and R. Nezafat, "On the Selection of Sampling Points for Myocardial T_1 Mapping," *Magnetic Resonance in Medicine*, 73(5), pp. 1741-1753, May 2015.
50. S. Weingärtner, S. Roujol, **M. Akçakaya**, T. A. Basha and R. Nezafat, "Free-Breathing Multi-Slice Native Myocardial T_1 Mapping using the Slice-Interleaved T1 (STONE) Sequence," *Magnetic Resonance in Medicine,* 74(1), pp. 115-214, July 2015.
51. S. Pflugi, S. Roujol, **M. Akçakaya**, K. Kawaji, M. Foppa, B. Heydari, B. Goddu, K. V. Kissinger, S. Berg, W. J. Manning, S. Kozerke and R. Nezafat, "Accelerated Cardiac MR Stress Perfusion with Radial Sampling After Physical Exercise with an MR-compatible Supine Bicycle Ergometer," *Magnetic Resonance in Medicine,* 74(2), pp. 384-395, Aug. 2015.
52. **M. Akçakaya**, T. A. Basha, S. Pflugi, M. Foppa, K. V. Kissinger, T. H. Hauser and R. Nezafat, "Localized Spatio-Temporal Constraints for CMR Perfusion," *Magnetic Resonance in Medicine,* 72(3), pp. 629-639, Sep 2014.
53. S. Weingärtner, **M. Akçakaya**, S. Roujol, T. A. Basha, C. Stehning, K. V. Kissinger, B. Goddu, S. Berg, W. J. Manning and R. Nezafat, "Free-Breathing Post-Contrast Three-dimensional T_1 Mapping: Volumetric Assessment of Myocardial T_1 Values," *Magnetic Resonance in Medicine,* 73(1): pp. 214-222, Jan. 2015.

54. S. Roujol, T. A. Basha, **M. Akçakaya**, M. Foppa, R. H. Chan, K. V. Kissinger, B. Goddu, S. Berg, W. J. Manning, R. Nezafat, "3D Late Gadolinium Enhancement in a Single Prolonged Breath-hold using Supplemental Oxygenation and Hyperventilation," *Magnetic Resonance in Medicine,* 72(3), pp. 850-857, Sep 2014.
55. **M. Akçakaya**, P. Gulaka, T. A. Basha, L. H. Ngo, W. J. Manning and R. Nezafat, "Free-Breathing Phase Contrast MRI with Near 100% Respiratory Navigator Efficiency using k-space Dependent Respiratory Gating," *Magnetic Resonance in Medicine,* 71(6), pp. 2172-2179, June 2014.
56. **M. Akçakaya**, T. A. Basha, R. H. Chan, W. J. Manning and R. Nezafat, "Accelerated Isotropic Sub-Millimeter Whole-Heart Coronary MRI: Compressed Sensing versus Parallel Imaging," *Magnetic Resonance in Medicine,* 71(2), pp. 815-822, Feb. 2014.
57. S. Weingärtner, **M. Akçakaya**, K. V. Kissinger, B. Goddu, S. Berg, W. J. Manning and R. Nezafat, "Combined Saturation/Inversion Recovery Sequences for Improved Evaluation of Scar and Diffuse Fibrosis in Patients with Arrhythmia or Heart Rate Variability," *Magnetic Resonance in Medicine,* 71(3), pp. 1024-1034, March 2014.
58. S. Nam, S. Hong, **M. Akçakaya**, Y. Kwak, B. Goddu, K. V. Kissinger, W. J. Manning, V. Tarokh, R. Nezafat, "Compressed Sensing Reconstruction for Undersampled Breath-Hold Radial Cine Imaging with Auxiliary Free-Breathing Data," *Journal of Magnetic Resonance Imaging*, 39(1), pp. 179-188, Jan. 2014.
59. **M. Akçakaya**, J. L. Shaw, T. H. Hauser and R. Nezafat, "Utility of Respiratory-Navigator-Rejected k-space Lines for Improved Signal-to-Noise Ratio in 3D Cardiac MR," *Magnetic Resonance in Medicine*, vol. 70(5), pp. 1332-1339, November 2013.
60. Y. Kwak, S. Nam, **M. Akçakaya**, T. A. Basha, B. Goddu, W. J. Manning, V. Tarokh, R. Nezafat, "Accelerated Aortic Flow Assessment with Compressed Sensing With and Without Use of the Sparsity of the Complex Difference Image," *Magnetic Resonance in Medicine*, 70(3), pp. 851-858, Sept. 2013.
61. S. Nam, **M. Akçakaya**, T. A. Basha, C. Stehning, W. J. Manning, V. Tarokh and R. Nezafat, "Compressed Sensing Reconstruction for Whole Heart Imaging with 3D Radial Trajectories: A GPU Implementation," *Magnetic Resonance in Medicine*, 69(1), pp. 91–102, January 2013.
62. **M. Akçakaya**, H. Rayatzadeh, T. A. Basha, S. N. Hong, R. H. Chan, K. V. Kissinger, T. H. Hauser, M, E. Josephson, W. J. Manning and R. Nezafat, "Accelerated Late Gadolinium Enhancement Cardiac MRI with Isotropic Spatial Resolution Using Compressed Sensing: Initial Experience," *Radiology*, 264(3):691-699, September 2012.
63. **M. Akçakaya**, T. A. Basha, R. H. Chan, H. Rayatzadeh, K. V. Kissinger, B. Goddu, L. A. Goepfert, W. J. Manning and R. Nezafat, "Accelerated Contrast-Enhanced Whole Heart Coronary MRI using Low-dimensional-Structure Self-learning and Thresholding (LOST)," *Magnetic Resonance in Medicine*, 67(5), pp. 1434-1443, May 2012.
64. M. H. Moghari, **M. Akçakaya**, A. O'Connor, T. A. Basha, M. Casanova, L. Goepfert, K. V. Kissinger, B. Goddu, M. L. Chuang, V. Tarokh, W. J. Manning and R. Nezafat, "Compressed-Sensing Motion Compensation (CosMo): A Joint Prospective-Retrospective Respiratory Navigator for Coronary MRI," *Magnetic Resonance in Medicine*, 66(6), pp. 1674-1681, Dec 2011.
65. **M. Akçakaya**, J. Park and V. Tarokh, "A Coding Theory Approach to Noisy Compressive Sensing Using Low Density Frames," *IEEE Trans. on Signal Processing*, 59(11), pp. 5369-5379, Nov. 2011.
66. **M. Akçakaya**, T. A. Basha, B. Goddu, L. A. Goepfert, K. V. Kissinger, V. Tarokh, W. J. Manning and R. Nezafat, "Low-dimensional-Structure Self-Learning and Thresholding (LOST): Regularization Beyond Compressed Sensing for MRI Reconstruction," *Magnetic Resonance in Medicine*, 66(3), pp. 756-767, Sep 2011. ***ISMRM I. I. Rabi Young Investigator Award Finalist***
67. **M. Akçakaya**, P. Hu, M. L. Chuang, T. H. Hauser, L. H. Ngo, W. J. Manning, V. Tarokh and R. Nezafat, "Accelerated Non-Contrast Enhanced Pulmonary Vein MRA with Distributed Compressed Sensing," *Journal of Magnetic Resonance Imaging*, 33(5), pp. 1248-1255, May 2011.
68. **M. Akçakaya**, S. Nam, P. Hu, M. H. Moghari, L. H. Ngo, V. Tarokh, W. J. Manning and R. Nezafat, "Compressed Sensing with Wavelet Domain Dependencies for Coronary MRI," *IEEE Trans. on Medical Imaging*, 30(5), pp.1090-1099, May 2011.
69. **M. Akçakaya** and V. Tarokh, "Shannon Theoretic Limits on Noisy Compressive Sampling," *IEEE Trans. on Information Theory,* 56(1), pp. 492-504, Jan. 2010.

70. **M. Akçakaya** and V. Tarokh, "A Frame Construction and A Universal Distortion Bound for Sparse Representations," *IEEE Trans. on Signal Processing,* 56(6), pp. 2443-2450, June 2008.
71. **M. Akçakaya** and V. Tarokh, "Performance of Sparse Representation Algorithms Using Randomly Generated Frames," *IEEE Signal Processing Letters*, 14(11), pp. 777-780, Nov. 2007.
72. N. Mysore, J. Bajcsy, **M. Akçakaya** and H. Kobayashi, "A New Performance Evaluation Technique for Iteratively Decoded Magnetic Recording Systems," *IEEE Trans. on Magnetics*, 41(10), pp. 2986-2988, Oct. 2005.

SELECTED CONFERENCE PUBLICATIONS/ABSTRACTS

Conference Papers

1. B. Yaman, S. A. H. Hosseini and **M. Akçakaya**, "Zero-Shot Self-Supervised Learning for MRI Reconstruction," International Conference on Learning Representations (ICLR), Apr. 2022.
2. C. Zhang, D. Piccini, O. B. Demirel, G. Bonanno, B. Yaman, M. Stuber, S. Moeller and **M. Akçakaya**, "Distributed Memory-Efficient Physics-Guided Deep Learning Reconstruction for Large-Scaled 3D Non-Cartesian MRI," Proc. 18th IEEE International Symposium on Biomedical Imaging (ISBI), Kolkata, West Bengal, India, March 2022.
3. C. Zhang, J. Jia, B. Yaman, S. Moeller, S. Liu, M. Hong and **M. Akçakaya**, "Instabilities of Conventional Multi-Coil MRI Reconstruction To Small Adversarial Perturbations," Proc. 55th IEEE Asilomar, Pacific Grove, CA, USA, November 2021.
4. O. B. Demirel, B. Yaman, L. Dowdle, S. Moeller, L. Vizioli, E. Yacoub, J. Strupp, C. Olman, K. Uğurbil and **M. Akçakaya**, "Improved Simultaneous Multi-Slice Functional MRI Using Self-supervised Deep Learning," Proc. 55th IEEE Asilomar, Pacific Grove, California, USA, November 2021.
5. Z. Deng, B. Yaman, C. Zhang, S. Moeller and **M. Akçakaya**, "Efficient training of 3D unrolled neural networks for MRI reconstruction using small databases," Proc. 55th IEEE Asilomar, Pacific Grove, California, USA, November 2021.
6. O. B. Demirel, B. Yaman, L. Dowdle, S. Moeller, L. Vizioli, E. Yacoub, J. Strupp, C. Olman, K. Uğurbil and **M. Akçakaya**, "20-fold Accelerated 7T fMRI Using Referenceless Self-Supervised Deep Learning Reconstruction," Proc. 43rd IEEE Engineering in Medicine and Biology Conference (EMBC), November 2021.
7. H. Gu, B. Yaman, K. Ugurbil, S. Moeller and **M. Akçakaya**, "Compressed Sensing MRI with $\ell 1$-Wavelet Reconstruction Revisited Using Modern Data Science Tools," Proc. 43rd IEEE Engineering in Medicine and Biology Conference (EMBC), November 2021.
8. J. Boon, T. Ploem, C. S. Simpson, I. Hermann, **M. Akçakaya**, E. H. Oei, A. A. Zadpoor, N. Tumer, T. M. Piscaer, J. Tourais and S. Weingartner, "Magnetic Resonance Imaging compatible Elastic Loading Mechanism (MELM): A minimal footprint device for MR imaging under load," Proc. 43rd IEEE Engineering in Medicine and Biology Conference (EMBC), November 2021.
9. B. Yaman, S.A.H. Hosseini, S. Moeller, and **M. Akçakaya**, "Improved Supervised Training of Physics-Guided Deep Learning Image Reconstruction with Multi-Masking," IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Toronto, June 2021.
10. B. Yaman, C. Shenoy, Z. Deng, H. El-Rewaidy, R. Nezafat and **M. Akçakaya**, "Self-Supervised Physics-Guided Deep Learning Reconstruction For High-Resolution 3D LGE CMR," IEEE International Symposium on Biomedical Imaging (ISBI), Nice, April 2021.
11. B. Yaman, S.A.H. Hosseini, S. Moeller, J. Ellermann, K. Uğurbil and **M. Akçakaya**, "Ground-Truth Free Multi-Mask Self-Supervised Physics-Guided Deep Learning in Highly Accelerated MRI," IEEE International Symposium on Biomedical Imaging (ISBI), Nice, April 2021.
12. S. A. Hosseini, B. Yaman, S. Moeller and **M. Akçakaya**, "High-Fidelity Accelerated MRI Reconstruction by Scan-Specific Fine-Tuning of Physics-Based Neural Networks," *IEEE Engineering in Medicine and Biology Conference (EMBC)*, Montreal, Canada, July 2020.
13. P. J. Bolan, F. Branzoli, A. L. Di Stefano, L. Nichelli, R. Valabregue, S. Saunders, **M. Akçakaya**, M. Sanson, S. Lehéricy, and M. Marjańska, "Automated Acquisition Planning for Magnetic Resonance Spectroscopy in Brain Cancer," International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), Lima, Peru, Oct. 2020.

14. B. Yaman, S. A. Hosseini, S. Moeller, J. Ellermann, K. Uğurbil and **M. Akçakaya**, "Self-Supervised Physics-Based Deep Learning MRI Reconstruction without Fully-Sampled Data," *IEEE International Symposium on Biomedical Imaging (ISBI),* Iowa City, IA, April 2020. ***Best Paper Award***
15. O. B. Demirel, S. Weingärtner, S. Moeller and **M. Akçakaya**, "Improved Simultaneous Multi-slice Imaging for Perfusion Cardiac MRI Using Outer Volume Suppression and Regularized Reconstruction," *IEEE International Symposium on Biomedical Imaging (ISBI),* Iowa City, IA, April 2020.
16. S. A. Hosseini, B. Yaman, C. Zhang, K. Uğurbil, S. Moeller and **M. Akçakaya**, "Scan-Specific Accelerated MRI Reconstruction in a Regularized Self-Consistent Framework Using Recurrent Neural Networks," *IEEE International Symposium on Biomedical Imaging (ISBI) Workshop on Deep Learning for Biomedical Image Reconstruction,* Iowa City, IA, April 2020.
17. C. Zhang, S. A. H. Hosseini, S. Moeller, S. Weingärtner, K. Uğurbil and **M. Akçakaya**. "Scan-Specific Residual Convolutional Neural Networks for Fast MRI Using Residual RAKI," *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2019.
18. B. Yaman, S. A. H. Hosseini, S. Moeller and **M. Akçakaya**. "Comparison of Neural Network Architectures for Physics-Driven Deep Learning MRI Reconstruction," *IEEE Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, Vancouver, Canada, October 2019.
19. O. B. Demirel, S. Weingärtner, S. Moeller and **M. Akçakaya**, "Improved Regularized Reconstruction for Simultaneous Multi-Slice Cardiac MRI T1 Mapping," *European Signal Processing Conference (EUSIPCO)*, A Coruña, Spain, September 2019.
20. S. A. Hosseini, C. Zhang, K. Uğurbil, S. Moeller and **M. Akçakaya**, "sRAKI-RNN: Accelerated MRI with Scan-Specific Recurrent Neural Networks using Densely Connected Blocks," *SPIE Wavelets and Sparsity XVIII*, San Diego, CA, August 2019.
21. S. Weingärtner, O. B. Demirel, C. Shenoy, F. Wenson, L. R. Schad, J. Schulz-Menger and **M. Akçakaya**, "Functional LGE Imaging: Cardiac Phase-Resolved Assessment of Focal Fibrosis," *IEEE Engineering in Medicine and Biology Conference (EMBC)*, Berlin, Germany, July 2019.
22. S. Weingärtner, X. Chen, **M. Akçakaya** and T. Moore, "Robust Online Spike Recovery for High-Density Electrode Recordings using Convolutional Compressed Sensing," *IEEE Conference on Neural Engineering (NER)*, San Francisco, CA, May 2019. ***Best Paper Finalist***
23. C. I. Kanatsoulis, N. D. Sidiropoulos, **M. Akçakaya** and X. Fu, "Regular sampling of tensor signals: Theory and application to fMRI," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019.
24. S. A. Hosseini, S. Moeller, S. Weingärtner, K. Uğurbil and **M. Akçakaya**, "Accelerated Coronary MRI Using 3D SPIRiT-RAKI with Sparsity Regularization," *IEEE International Symposium on Biomedical Imaging (ISBI),* Venice, Italy, April 2019.
25. C. Zhang, S. Moeller, S. Weingärtner, K. Uğurbil and **M. Akçakaya**, "Accelerated Simultaneous Multi-Slice MRI using Subject-Specific Convolutional Neural Networks," *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, October 2018.
26. **M. Akçakaya**, S. Moeller, S. Weingärtner and K. Uğurbil, "Subject-Specific Convolutional Neural Networks for Accelerated Magnetic Resonance Imaging," *IEEE International Joint Conference on Neural Networks (IJCNN),* Rio de Janeiro, Brazil, July, 2018.
27. C. Zhang, S. Weingärtner, S. Moeller, K. Uğurbil and **M. Akçakaya**, "Fast GPU Implementation of a Scan-Specific Deep Learning Reconstruction for Accelerated Magnetic Resonance Imaging," *IEEE International Conference on Electro Information Technology*, May 2018.
28. L. Zhang, G. V. Karanikolas, **M. Akçakaya**, and G. B. Giannakis, "Fully Automatic Segmentation of the Right Ventricle Via Multi-Task Deep Neural Networks," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Calgary, Canada, April 2018.
29. B. Yaman, S. Weingärtner, N. Kargas, N. Sidiropoulos and **M. Akçakaya**, "Locally Low-Rank Tensor Regularization for High-Resolution Quantitative Dynamic MRI," *IEEE Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Dec. 2017.
30. S. Moeller, S. Weingärtner and **M. Akçakaya**, "Multi-Scale Locally Low-Rank Noise Reduction for High-Resolution Dynamic Quantitative Cardiac MRI," *IEEE Engineering in Medicine and Biology Conference (EMBC)*, Jeju Island, Korea, July 2017.

31. G. Wang, L. Zhang, G. B. Giannakis, J. Chen and **M. Akçakaya**, "SPARTA: Sparse Phase Retrieval via Truncated Amplitude Flow," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, New Orleans, LA, March 2017.
32. **M. Akçakaya**, T. A. Basha, S. Weingärtner and R. Nezafat, "Joint Image Reconstruction and Motion Parameter Estimation for Free-Breathing Navigator-Gated Cardiac MRI," *SPIE International Symposium on Optical Science and Technology, Wavelets and Sparsity XV*, August 2013 (invited).
33. **M. Akçakaya** and V. Tarokh, "Distortion-Based Achievability Conditions for Joint Estimation of Sparse Signals and Measurement Parameters from Undersampled Acquisitions," *IEEE International Symposium on Information Theory (ISIT)*, Istanbul, Turkey, July 2013.
34. **M. Akçakaya**, J. Park and V. Tarokh, "Low Density Frames for Compressive Sensing," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Dallas, TX, March 2010.
35. **M. Akçakaya** and V. Tarokh, "Limits on Noisy Compressive Sampling in Linear and Sublinear Regimes," *Conference on Information Sciences and Systems (CISS)*, Princeton, NJ, March 2008 (invited).
36. **M. Akçakaya** and V. Tarokh, "On Sparsity, Redundancy and Quality of Frame Representations," *IEEE International Symposium on Information Theory (ISIT)*, Nice, France, June 2007.
37. **M. Akçakaya** and V. Tarokh, "Performance Study of Various Sparse Representation Methods Using Redundant Frames," *Conference on Information Sciences and Systems (CISS),* Baltimore, MD, March 2007.
38. N. Mysore, **M. Akçakaya**, J. Bajcsy and H. Kobayashi, "A New Performance Evaluation Technique for Iteratively Decoded Magnetic Recording Systems," *IEEE International Magnetics Conference*, Nagoya, Japan, April 2005.

Selected Conference Abstracts (>100 abstracts, only selected first- and last-author abstracts listed)

39. O. B. Demirel, B. Yaman, S. Moeller, L. Dowdle, L. Vizioli, K. Kay, E. Yacoub, J. Strupp, C. Olman, K. Uğurbil and **M. Akçakaya**, "Improved Accelerated fMRI Reconstruction using Self-supervised Deep Learning," Proc. 29th Meeting of ISMRM, Vancouver, BC, Canada, May 2021.
40. B. Yaman, S.A.H. Hosseini, S. Moeller, J. Ellermann, K. Uğurbil and **M. Akçakaya**, "Multi-Mask Self-Supervised Deep Learning for Highly Accelerated Physics-Guided MRI Reconstruction," Proc. 29th Meeting of ISMRM, Vancouver, May 2021.
41. B. Yaman, S.A.H. Hosseini, S. Moeller and **M. Akçakaya**, "Enhancing the Reconstruction quality of Physics-Guided Deep Learning via Holdout Multi-Masking," Proc. 29th Meeting of ISMRM, Vancouver, May 2021.
42. C. Zhang, J. Jia, B Yaman, S. Moeller, S. Liu, M Hong and **M. Akçakaya**, "On Instabilities of Conventional Multi-Coil MRI Reconstruction to Small Adversarial Perturbations", Proc. 29th Meeting of ISMRM, Vancouver, May 2021.
43. H. Gu, B. Yaman, K. Uğurbil, S. Moeller and **M. Akçakaya**, "Compressed Sensing MRI Revisited: Optimizing l1-Wavelet Reconstruction with Modern Data Science Tools," Proc. 29th Meeting of ISMRM, Vancouver, May 2021.
44. Z. Deng, B. Yaman, C. Zhang, S. Moeller and **M. Akçakaya**, "Effective Training of 3D Unrolled Neural Networks on Small Databases," Proc. 29th Meeting of ISMRM, Vancouver, May 2021.
45. J. Tourais, I. Hermann, O. B. Demirel, S. Weingärtner and **M. Akçakaya**, " 2D High Resolution Myocardial TRAFF2 Mapping: Reproducibility and Accuracy," Proc. 29th Meeting of ISMRM, Vancouver, May 2021.
46. B. Yaman, C. Shenoy, Z. Deng, H. El-Rewaidy, R. Nezafat and **M. Akçakaya**, "Physics-Guided Self-Supervised Deep Learning Reconstruction without Fully-Sampled Data for Improved High-Resolution 3D LGE CMR," Proc. 24th Meeting of SCMR, February 2021. ***SCMR Early Career Award Finalist (Basic Science)***
47. J. Tourais, I. Hermann, O. B. Demirel, S. Weingärtner and **M. Akçakaya**, "2D Myocardial TRAFFn: Relaxation Along Fictitious Field in the nth Rotating Frame," Proc. 24th Meeting of SCMR, February 2021.
48. B. Yaman, S.A.H. Hosseini, S. Moeller, J. Ellermann, K. Uğurbil and **M. Akçakaya**, "Physics-Based Self-Supervised Deep Learning for Accelerated MRI Without Fully Sampled Reference Data," Proc. 28th Meeting of ISMRM, August 2020.
49. S.A.H. Hosseini, B. Yaman, S. Moeller, J. Ellermann, K. Uğurbil, M. Hong and **M. Akçakaya**, "Unrolled Physics-Based Deep Learning MRI Reconstruction with Dense Connections using Nesterov Acceleration ," Proc. 28th Meeting of ISMRM, August 2020.
50. O. B. Demirel, S. Weingärtner, S. Moeller and **M. Akçakaya**, "Improved SMS Reconstruction using ReadOut-Concatenated K-space SPIRiT (ROCK-SPIRiT)", Proc. 28th Meeting of ISMRM, August 2020.

51. S. A. Hosseini, C. Zhang, S. Weingärtner, S. Moeller, K. Uğurbil and **M. Akçakaya**, "Regularized sRAKI-RNN: Accelerated Coronary MRI Using Database-Free Machine Learning Reconstruction," *Proc. 23rd Meeting of SCMR*, Orlando, FL, February 2020.
52. B. Yaman, S. A. Hosseini, S. Moeller, J. Ellermann, K. Uğurbil and **M. Akçakaya**, "Ground Truth-Free Deep Learning MRI Reconstruction Using Physics Based Self-Supervised Learning," *ISMRM Workshop on Data Sampling & Image Reconstruction*, Sedona, AZ, January 2020.
53. O. B. Demirel, S. Weingärtner, S. Moeller and **M. Akçakaya**, "ReadOut-Concatenated k-space SPIRiT (ROCK-SPIRiT): regularized reconstruction for improved SMS imaging," *ISMRM Workshop on Data Sampling & Image Reconstruction*, Sedona, AZ, January 2020.
54. O. B. Demirel, S. Weingärtner, S. Moeller, and **M. Akçakaya**, "Multi-Band SPIRiT Strategies for Improved Simultaneous Multi-slice Myocardial Mapping," *Proc. 27th Meeting of ISMRM*, Montreal, May 2019.
55. S. A. Hosseini, S. Moeller, S. Weingärtner, K. Uğurbil and **M. Akçakaya**, "Accelerated Coronary MRI using Sparsity-Regularized SPIRiT-RAKI," *Proc. 27th Meeting of ISMRM*, Montreal, May 2019.
56. B. Yaman, S. Weingärtner, S. Moeller, N. Kargas, N. D. Sidiropoulos and **M. Akçakaya**, "High-Resolution Dynamic Myocardial T1 Mapping using Low-Rank Tensor Regularization Methods," *Proc. 27th Meeting of ISMRM,* Montreal, May 2019.
57. C. Zhang, S. Moeller, S. Weingärtner, K. Uğurbil and **M. Akçakaya**, "Accelerated MRI Using Residual RAKI: Scan-specific Learning of Reconstruction Artifacts," *Proc. 27th Meeting of ISMRM*, Montreal, May 2019.
58. S. Moeller, S. Ramanna, K. Uğurbil and **M. Akçakaya**, "kz-GRAPPA for 3D parallel imaging with localized estimation of interpolation kernels," *Proc. 27th Meeting of ISMRM,* Montreal, May 2019.
59. S. A. Hosseini, S. Moeller, S. Weingärtner, K. Uğurbil and **M. Akçakaya**, "Accelerated MRI Using Scan-Specific SPIRiT-RAKI Interpolation with Sparsity Regularization," *International Biomedical and Astronomical Signal Processing (BASP) Frontiers Workshop*, Villars-sur-Ollon, Switzerland, February 2019.
60. **M. Akçakaya**, S. Moeller, S. Weingärtner and K. Uğurbil, "Scan-specific Robust Artificial-neural-networks for k-space Interpolation-based (RAKI) Reconstruction: Database-free Deep Learning for Fast Imaging," *Proc. 26th Meeting of ISMRM*, Paris, June 2018.
61. S. Weingärtner, S. Moeller, C. Shenoy and **M. Akçakaya**, "High-Resolution T1 Mapping using Parameter-Free Low Rank Denoising," *Proc. 26th Meeting of ISMRM*, Paris, June 2018.
62. S. Weingärtner, S. Moeller and **M. Akçakaya**, "Feasibility of Ultra-high Simultaneous Multi-slice and In-plane Accelerations for Cardiac MRI Using Outer Volume Suppression and Leakage-Blocking Reconstruction," *Proc. 26th Meeting of ISMRM*, Paris, June 2018.
63. S. Weingärtner, B. Yaman, C. Shenoy, M. Prothmann, F. Wenson, J. Schulz-Menger and **M. Akçakaya**, "Cardiac Phase-resolved Late-Gadolinium Enhancement Imaging," *Proc. 26th Meeting of ISMRM*, Paris, June 2018. ***Best Cardiac MR Presentation***
64. S. Moeller, S. Weingärtner, K. Uğurbil and **M. Akçakaya,** "Application of a Scan-Specific Deep Learning Reconstruction to Multiband/SMS Imaging," *Proc. 26th Meeting of ISMRM*, Paris, June 2018.
65. S. Moeller, S. Ramanna, E. Yacoub and **M. Akçakaya**, "Progress in the use of SQUASHER for Diffusion weighted imaging," *Proc. 26th Meeting of ISMRM*, Paris, June 2018.
66. S. Weingärtner, S. Moeller, K. Uğurbil, C. Shenoy and **M. Akçakaya**, "Simultaneous Multi-Slice Imaging For Whole Heart Myocardial T_1 Mapping in a Single Breath-Hold," *Proc. 25th Meeting of ISMRM*, Hawaii, HI, April 2017.
67. S. Weingärtner, S. Moeller, C. Shenoy and **M. Akçakaya**, "16-fold Spatial-Only Acceleration For High-Resolution Myocardial Perfusion Using Multi-Band Imaging and Multi-Band Outer Volume Suppression," *Proc. 25th Meeting of ISMRM*, Hawaii, HI, April 2017.
68. S. Moeller, X. Wu, N. Harel, M. Garwood and **M. Akçakaya**, "SQUASHER: 3D Fourier encoding with frequency swept pulses," *Proc. 25th Meeting of ISMRM*, Hawaii, HI, April 2017.
69. S. Weingärtner, C. Shenoy and **M. Akçakaya**, "Cine T_1 Mapping: B_1 corrected Look-Locker inversion recovery for phase resolved T_1-Mapping at 3T," *Journal of Cardiovascular Magnetic Resonance*, 19 Suppl 1:P172, 2017.
70. S. Weingärtner, G. Metzger, P.-F. van de Moortele and **M. Akçakaya**, "Cardiac Phase-Resolved B_1^+ Mapping at 3T," *Proc. 24th Meeting of ISMRM*, Singapore, Singapore, May 2016.
71. S. Moeller, S. Schmitter and **M. Akçakaya**, "Noise Amplification vs. Resolution Tradeoff in the SLIDER Technique" *Proc. 24th Meeting of ISMRM*, Singapore, Singapore, May 2016.

72. **M. Akçakaya**, T. A. Basha, C. Tsao, S. Berg, K. V. Kissinger, B. Goddu, W. J. Manning and R. Nezafat, "High-Resolution Late Gadolinium Enhancement Imaging with Compressed Sensing: A Single-Center Clinical Study," *Journal of Cardiovascular Magnetic Resonance*, 18 Suppl 1:O56, 2016.
73. **M. Akçakaya**, V. Tarokh and R. Nezafat, "Joint Compressed Sensing and Sparse Phase Retrieval: Reconstruction from a Combination of Complex and Magnitude-only k-space Measurements," *Proc. 23rd Meeting of ISMRM*, Toronto, Canada, May 2015.
74. **M. Akçakaya**, S. Weingärtner, T. A. Basha, S. Roujol and R. Nezafat, "Joint Myocardial T_1 and T_2 Mapping Using a Saturation-Recovery Sequence," *Proc. 23rd Meeting of ISMRM*, Toronto, Canada, May 2015.
75. **M. Akçakaya**, T. A. Basha, W. J. Manning and R. Nezafat, "Efficient Calculation of g-factors for CG-SENSE in High Dimensions: Noise Amplification in Random Undersampling," *Journal of Cardiovascular Magnetic Resonance*, 16 Suppl 1:W28, 2014.
76. **M. Akçakaya**, S. Weingärtner, W. J. Manning and R. Nezafat, "Selection of Sampling Points for Saturation Recovery Based Myocardial T1 Mapping," *J Cardiovascular Magnetic Resonance*, 16 Suppl 1:W32, 2014.
77. **M. Akçakaya**, J. L. Shaw, T. H. Hauser and R. Nezafat, "Improved Signal-To-Noise Ratio in Late Gadolinium Enhancement Imaging by Using Respiratory-Navigator-Rejected K-Space Lines," *Proc. 21st Meeting of ISMRM*, Salt Lake City, USA, May 2013.
78. **M. Akçakaya**, T. A. Basha, R. H. Chan, W. J. Manning and R. Nezafat, "Accelerated Sub-mm Whole-Heart Coronary MRI: Compressed Sensing vs. Parallel Imaging," *Proc. 21st Meeting of ISMRM*, Salt Lake City, USA, May 2013.
79. **M. Akçakaya**, T. A. Basha, M. Foppa, K. V. Kissinger, W. J. Manning and R. Nezafat, "Accelerated Three-Dimensional Free-Breathing First Pass Cardiac Perfusion at 1.5T," *Journal of Cardiovascular Magnetic Resonance*, 15 Suppl 1:P42, 2013.
80. **M. Akçakaya**, P. Gulaka, T. A. Basha, T. H. Hauser, W. J. Manning and R. Nezafat, "Improved Efficiency for Respiratory Motion Compensation in Three-Dimensional Flow Measurements," *Journal of Cardiovascular Magnetic Resonance*, 15 Suppl 1:P30, 2013.
81. **M. Akçakaya**, M. Henningsson, R. Nezafat and R. M. Botnar, "Comparison of Respiratory Navigator Techniques for Interleaved High-Resolution Coronary Vessel Wall Imaging," *Journal of Cardiovascular Magnetic Resonance*, 15 Suppl 1:E20, 2013.
82. **M. Akçakaya**, H. Rayatzadeh, S. N. Hong, T. H. Hauser, R. H. Chan, T. A. Basha, K. V. Kissinger, B. Goddu, W. J. Manning and R. Nezafat, "Improved Late Gadolinium Enhancement Imaging of Left Ventricle with Isotropic Spatial Resolution," *Journal of Cardiovascular Magnetic Resonance*, 14 Suppl 1:O22, 2012. ***SCMR Early Career Award Finalist (Basic Translational)***
83. **M. Akçakaya**, S. N. Hong, R. H. Chan, T. A. Basha, M. H. Moghari, K. V. Kissinger, B. Goddu, M. E. Josephson W. J. Manning and R. Nezafat, "Left Atrial Scar Assessment using Imaging with Isotropic Spatial Reso;ution and Compressed Sensing," *Journal of Cardiovascular Magnetic Resonance*, 14 Suppl 1:O8, 2012. ***SCMR Early Career Award Finalist (Basic Science)***
84. **M. Akçakaya**, T. A. Basha, B. Goddu, L. Goepfert, K. V. Kissinger, V. Tarokh, W. J. Manning and R. Nezafat, "Low-dimensional-Structure Self-Learning and Thresholding (LOST): Regularization Beyond Compressed Sensing for MRI Reconstruction," *Proc. 19th Meeting of ISMRM*, Montreal, Canada, May 2011.
85. **M. Akçakaya**[*], S. Nam[*], T. A. Basha, V. Tarokh, W. J. Manning and R. Nezafat, "Iterative Compressed Sensing Reconstruction for 3D Non-Cartesian Trajectories without Gridding & Regridding at Every Iteration," *Proc. 19th Meeting of ISMRM*, Montreal, Canada, May 2011 ([*]: denotes co-first authorship).
86. **M. Akçakaya**[*], T. A. Basha[*], K. V. Kissinger, B. Goddu, L. Goepfert, W. J. Manning and R. Nezafat, " Accelerated Contrast-Enhanced Whole Heart Coronary MRI Using Low-dimensional-Structure Self-learning and Thresholding (LOST), an Improved Compressed Sensing Reconstruction," *Proc. 19th Meeting of ISMRM*, Montreal, Canada, May 2011 ([*]: denotes co-first authorship).
87. **M. Akçakaya**, S. Nam, P. Hu, V. Tarokh, W. J. Manning and R. Nezafat, "Compressed Sensing with Transform Domain Dependencies for Coronary MRI," *Proc. 18th Meeting of ISMRM*, Stockholm, Sweden, May 2010.
88. **M. Akçakaya**, P. Hu, V. Tarokh, W. J. Manning and R. Nezafat, "Non-Contrast Enhanced Pulmonary Vein MRA with Compressed Sensing," *Proc. 18th Meeting of ISMRM*, Stockholm, Sweden, May 2010.
89. **M. Akçakaya**, S. Nam, M. H. Moghari, P. Hu, W. J. Manning, V. Tarokh and R. Nezafat, "Accelerated Coronary MRI Using Compressed Sensing with Transform Domain Dependencies: A Feasibility Study," *Journal of Cardiovascular Magnetic Resonance*, 12 (Suppl 1), pp. 107-108, 2010.

BOOKS

Editor

1. **M. Akçakaya**, M. Doneva and C. Prieto (Eds.), *Magnetic Resonance Image Reconstruction: Theory, Methods, and Applications.* Academic Press, 2022.

Chapters

2. **M. Akçakaya** and R. Nezafat, "Magnetic Resonance Imaging of Coronary Arteries," in *Basic Principles of Cardiovascular MRI.* Syed, Raman & Simonetti (Eds.), p. 245-260, Springer, 2015.
3. **M. Akçakaya**, C. Prieto, R. Botnar and R. Nezafat, "Magnetic Resonance Imaging of Coronary Arteries: Technique" in *Cardiovascular Magnetic Resonance: A Companion to Braunwald's Heart Disease, 3rd Edition.* Manning.& Pennell (Eds.), p. 291-300, Elsevier, 2018.
4. **M. Akçakaya**, M. Tang and R. Nezafat, "Cardiac Magnetic Resonance Imaging Physics," in *Cardiovascular MRI*. Kwong, Heydari & Jerosch-Herold (Eds.), Springer, 2019.
5. K. Hammernik and **M. Akçakaya**, "Artificial Intelligence for Image Enhancement and Reconstruction in Magnetic Resonance Imaging," in *Artificial Intelligence in Cardiothoracic Imaging*, De Cecco, Leiner & van Essen (Eds.), Springer, in press.
6. **M. Akçakaya**, G. Oh and J. C. Ye, "k-space deep learning for MR reconstruction and artifact removal," in *Deep Learning for Biomedical Image Reconstruction*, Eldar & Ye (Eds.), Cambridge University Press, in press.
7. G. Cruz, B. Yaman, **M. Akçakaya**, M. Doneva, C. Prieto. "MRI reconstruction as an inverse problem," in *Magnetic Resonance Image Reconstruction: Theory, Methods and Applications,* **M. Akçakaya**, M. Doneva, and C. Prieto (Eds.), Academic Press. In Press.

PATENTS

1. **M. Akçakaya** and R. Nezafat, "Method for Image Reconstruction using Low-dimensional-structure Self-learning and Thresholding," US Patent #8,699,773.
2. **M. Akçakaya,** J. L. Shaw, S. Roujol and R. Nezafat, "Method and Apparatus For Image Enhancement in Magnetic Resonance Imaging Using Motion Corrupted Data," US Patent #9,202,272.
3. **M. Akçakaya**, P. Gulaka and R. Nezafat, "Image processing apparatus, K-space generation method, magnetic resonance image apparatus, and control method of magnetic resonance image apparatus ," US Patent #9,651,641.
4. S. Weingärtner, **M. Akçakaya** and R. Nezafat, "System and Method for Free-breathing Volumetric Imaging of Cardiac Tissue," US Patent # 9,835,705.
5. **M. Akçakaya,** T. A. Basha, W. J. Manning and R. Nezafat, "Methods and Apparatus for Accurate Measurements of T_2 Relaxation Time in MRI," US Patent #10,330,760.
6. S. Weingärtner, **M. Akçakaya**, W. J. Manning and R. Nezafat, "System and Method for Improved Cardiac Imaging of Subjects with Adverse Cardiac Conditions," US Patent #10,531,812.
7. S. Weingärtner and **M. Akçakaya**, "System and Method for Reducing Partial Voluming Artifacts in Quantitative Myocardial Tissue Characterization," US Patent #10,451,700.
8. S. Weingärtner and **M. Akçakaya**, "System and Method for Motion-Robust Mapping of the Transmit Field in Magnetic Resonance Imaging," US Patent #10,739,420.
9. S. Weingärtner and **M. Akçakaya**, "System and Method for Dynamic, Cardiac Phase-Resolved Quantitative Longitudinal Relaxation Parameter Mapping," US Patent #10,775,464.
10. S. Weingärtner and **M. Akçakaya**, "System and Method for Producing Temporally Resolved Imaged Depicting Late-Gadolinium Enhancement with Magnetic Resonance Imaging," US Patent Pending.
11. S. Moeller and **M. Akçakaya**, "Method For Magnetic Resonance Imaging Using Slice Quadratic Phase for Spatiotemporal Encoding," US #11,009,576.
12. S. Weingärtner, S. Moeller and **M. Akçakaya**, "Method and Apparatus for Scan Time Reductions in Magnetic Resonance Imaging Using Outer Volume Suppression," US Patent #10,962,617.
13. **M. Akçakaya** and S. Moeller, "Methods for Scan-Specific k-space Interpolation Reconstruction in Magnetic Resonance Imaging Using Machine Learning," US Patent Pending.
14. S. Moeller and **M. Akçakaya**, "System and method for controlling noise in Magnetic Resonance Imaging using a local low-rank technique," US Patent #10,768,260.

15. S. Moeller and **M. Akçakaya**, "Methods for Estimating and Implementing Region-Specific k-space Interpolation," US Patent Pending.
16. S. Moeller, S. Ramanna and **M. Akçakaya**, "Efficient Multi-Shot EPI with Self-Navigated Segmentation," US Patent Pending.
17. S. Moeller, **M. Akçakaya** and S.-W. Chieh, "Scalable Self-Calibrated Interpolation of Undersampled Magnetic Resonance Imaging Data," US Patent #11,231,475.
18. **M. Akçakaya**, S. Moeller and C. Zhang, "Methods for Scan-Specific Artifact Reduction in Accelerated Magnetic Resonance Imaging Using Residual Convolutional Neural Networks," Provisional US Patent.
19. **M. Akçakaya**, B. Yaman and S. A. H. Hosseini, "Methods for Training Machine Learning Algorithms without Fully-Sampled Reference Data for Inverse Problems," Provisional US Patent.

SERVICE AND PUBLIC ENGAGEMENT

Professional Societies
Senior Member of IEEE; *Member of* ISMRM, SCMR and SIAM.

Professional Committee Service
1. Member, *IEEE Computational Imaging Technical Committee* (CI TC), 2018 – Present
2. Member, *ISMRM Young Investigator Award Committee*, 2017 - 2020
3. Member, *SCMR Public Relations Committee*, 2017 - 2019

Conference Service
1. Associate Editor, *IEEE International Conference on Acoustics, Speech, and Signal Processing* (2022)
2. Special Session Organizer & Chair, "Signal Processing for Neural and Medical Imaging," *Asilomar Conference on Signals, Systems, and Computers* (2021)
3. Session Chair, "Medical Image Formation and Reconstruction," *IEEE International Conference on Acoustics, Speech, and Signal Processing* (2021)
4. Session Chair, "Sensitivity and specificity in fMRI studies," *Workshop on High and Ultra-High Field Imaging* (2021)
5. Session Chair, "Quantitative Cardiovascular Tissue Characterization," *Annual Meeting of the ISMRM* (2021)
6. Session Chair, "AI and Machine Learning & Workflow," *SCMR/ISMRM Workshop on Advanced CMR of Cardiac Mechanics & Hemodynamics: Towards Individualized Evaluation of Cardiovascular Disease*.
7. Workshop Co-Organizer, "Deep Learning for Biomedical Image Reconstruction," *IEEE International Symposium on Biomedical Imaging* (2020)
8. Chair: Signal Processing Track, *IEEE Annual Information Technology, Electronics, and Mobile Communication Conference* (2019)
9. Special Session Organizer, "Machine Learning Advances in Computational Imaging," *Asilomar Conference on Signals, Systems, and Computers* (2019)
10. Program Committee: *SPIE Wavelets and Sparsity XVIII* (2019)
11. Special Session Organizer & Chair, "Inverse Problems in MRI," *SPIE Wavelets and Sparsity XVIII* (2019)
12. Scientific Program Committee, *SCMR/ISMRM Co-Provided Workshop on the Emerging Role of Machine Learning in Cardiovascular Magnetic Resonance Imaging* (2019)
13. Organizing Committee: *ISMRM Workshop on Machine Learning, Part II* (2018)
14. Vice Chair: Biomedical Signal and Image Processing Track, *Asilomar Conference on Signals, Systems, and Computers* (2018)
15. Technical Committee: *IEEE Ubiquitous Computing, Electronics and Mobile Communication Conference* (2016-2018)
16. Technical Committee: *IEEE Annual Information Technology, Electronics, and Mobile Communication Conference* (2018)
17. Session Chair, "Artifact Correction & Post-Processing," *ISMRM Workshop on Machine Learning, Part II* (2018)
18. Special Session Organizer & Chair, "Machine Learning Advances in Medical Imaging," *Asilomar Conference on Signals, Systems, and Computers* (2018)
19. Special Session Co-organizer & Co-chair, "Machine Learning in Medical Imaging: From Measurements to Diagnosis," *IEEE International Conference on Acoustics, Speech, and Signal Processing* (2018)

20. International Program Committee: *IEEE International Conference on Electro Information Technology* (2017)
21. Session chair, “Learning Image Reconstruction: Will Neural Networks Change Everything?,” *Annual Meeting of the ISMRM* (2017)
22. Session Chair, “Myocardial Tissue Characterization," *Annual Meeting of the ISMRM* (2016)
23. Session Chair, “Motion Correction: No Brainer,” *Annual Meeting of the ISMRM* (2016)
24. Session Chair, “New Contrast and Methods,” *Workshop on High and Ultra-High Field Imaging* (2015)

Reviewer Service for Journals

1. Magnetic Resonance in Medicine (Distinguished Reviewer Recognition, 2018)
2. Journal of Magnetic Resonance Imaging (Distinguished Reviewer Recognition, 2017)
3. IEEE Transactions on Medical Imaging
4. IEEE Transactions on Computational Imaging
5. IEEE Transactions on Image Processing
6. IEEE Transactions on Biomedical Engineering
7. IEEE Signal Processing Magazine
8. IEEE Transactions on Signal Processing
9. IEEE Journal of Selected Topics in Signal Processing
10. IEEE Signal Processing Letters
11. IEEE Transactions on Information Theory
12. IEEE Journal of Biomedical and Health Informatics
13. Medical Image Analysis (MEDIA)
14. Nature Scientific Reports
15. Magnetic Resonance Imaging
16. NMR in Biomedicine
17. NeuroImage
18. Journal of Cardiovascular Magnetic Resonance
19. PLoS ONE
20. Circulation
21. Circulation: Cardiovascular Imaging
22. Journal of the American Heart Association
23. Sensors
24. BMC Medical Imaging
25. Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA)
26. Digital Signal Processing
27. Journal of Parallel and Distributed Computing

OTHER ACTIVITIES

Eureka! Faculty Lecturer: Interactive lecture on *Medical Image Processing* as part of the Eureka! Program, in an outreach effort to 8th and 9th grade girls interested in STEM fields. Eureka! is a partnership between the University of Minnesota College of Science & Engineering and the YWCA of Minneapolis' Girls, Inc. chapter, aimed at middle school girls from under-represented and under-privileged backgrounds, who are interested in pursuing STEM careers.

PERSONAL

Interests: Rowing (Harvard Graduate School team captain, Harvard Law School member), classical guitar