Stanford



Shreyas Vasanawala, MD/PhD

William R. Brody Professor of Pediatric Radiology and Child Health

Radiology - Pediatric Radiology

CLINICAL OFFICE (PRIMARY)

- **LPCH Pediatric Radiology**

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ACADEMIC CONTACT INFORMATION

- **Administrative Contact**

  Marissa Lee - Administrative Associate

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Bio

BIO

Dr. Vasanawala received his bachelor's degree in mathematics from Caltech, and then completed his medical training and PhD at Stanford. His research efforts are focused on democratizing access to advanced medical imaging. Approaches in the lab range from novel hardware, image acquisition algorithms, image reconstruction techniques, and image processing methods. He serves as the Division Chief of Pediatric Radiology, Associate Chair of Radiology, and the Radiologist-in-Chief for Pediatric Radiology.

CLINICAL FOCUS

- Pediatric and Abdominal MRI
- Cardiovascular Diagnostic Techniques
- Pediatric Radiology

ACADEMIC APPOINTMENTS

- Professor, Radiology - Pediatric Radiology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)

ADMINISTRATIVE APPOINTMENTS

- Associate Chair, Radiology, Stanford, (2021- present)
- Division Chief, Pediatric Radiology, Stanford, (2021- present)
- Radiologist in Chief, Stanford Childrens, (2021- present)
- Director of MRI, Stanford Hospital and Clinics, (2017-2021)
- Chief, Body MRI, Stanford, (2011-2021)

HONORS AND AWARDS

- Tashia and John Morgridge Faculty Endowed Scholar in Pediatric Translational Medicine, Child Health Research Institute

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, ISMRM (1997 - present)
- Member, Society for Pediatric Radiology (2007 - present)
- Fellow, American Institute for Medical and Biological Engineering (2019 - present)
- Member, American Society for Clinical Investigation (2019 - present)
- Board Member, Lucile Packard Foundation for Children's Health (2026 - present)

PROFESSIONAL EDUCATION

- Internship: Stanford University Dept of Surgery (2002) CA
- Fellowship: Stanford University - Fellowship (2007) CA
- Residency: Stanford University - Fellowship (2006) CA
- Fellowship: Children's Hospital Medical Center (2006) OH
- Medical Education: Stanford University School of Medicine (2001) CA
- Board Certification: Diagnostic Radiology, American Board of Radiology (2006)
- Board Certification: Pediatric Radiology, American Board of Radiology (2008)
- Fellowship: Hospital for Sick Children (2007) Canada

PATENTS

- Shreyas Vasanawala. "United States Patent 8,638,096 Method of autocalibrating parallel imaging interpolation from arbitrary K-space sampling with noise correlations weighted to reduce noise of reconstructed images"
- Shreyas Vasanawala, Christopher Sandino, Joseph Cheng, Jiacheng He. "United States Patent 11,125,846 Method for correction of phase-contrast magnetic resonance imaging data using a neural network", Leland Stanford Junior University, Sep 21, 2021
- Shreyas Vasanawala, Feiyu Chen, Christopher Sandino, Joseph Cheng, John Pauly. "United States Patent 11,085,988 Method for estimating systematic imperfections in medical imaging systems with deep learning", Leland Stanford Junior University, Aug 10, 2021
- Shreyas Vasanawala, David Zeng, Joseph Cheng. "United States Patent 11,062,490 Reinforcement learning for online sampling trajectory optimization for magnetic resonance imaging", Leland Stanford Junior University, Jul 13, 2021
- Shreyas Vasanawala, Joseph Cheng, Tao Zhang, John Pauly. "United States Patent 10,928,475 Dynamic contrast enhanced magnetic resonance imaging with flow encoding", Leland Stanford Junior University, Feb 23, 2021
- Shreyas Vasanawala, Joseph Cheng, Feiyu Chen, John Pauly. "United States Patent 10,740,931 Method for performing magnetic resonance imaging reconstruction with unsupervised deep learning", Leland Stanford Junior University, Aug 11, 2020
- Shreyas Vasanawala, Christopher Sandino, Peng Lai, Joseph Cheng. "United States Patent 10,712,416 Methods and systems for magnetic resonance image reconstruction using an extended sensitivity model and a deep neural network", Leland Stanford Junior University, Jul 14, 2020
- Shreyas Vasanawala, Albert Hsiao, Marcus Alley. "United States Patent 10,698,061 Comprehensive cardiovascular analysis with volumetric phase-contrast MRI", Leland Stanford Junior University, Jun 30, 2020
- Shreyas Vasanawala, Joseph Cheng, Morteza Korani, John Pauly. "United States Patent 10,692,250 Generalized multi-channel MRI reconstruction using deep neural networks", Leland Stanford Junior University, Jun 23, 2020
- Shreyas Vasanawala, Joseph Cheng. "United States Patent 10,527,699 Unsupervised deep learning for multi-channel MRI model estimation", Leland Stanford Junior University, Jan 7, 2020
- Shreyas Vasanawala, Feiyu Chen, Tao Zhang, Joseph Cheng, Valentina Taviani, Brian Hargreaves, John Pauly. "United States Patent 10,520,573 System and method for performing wave-encoded magnetic resonance imaging of an object", Leland Stanford Junior University, Dec 31, 2019
- Shreyas Vasanawala, Albert Hsiao, Marcus Alley. "United States Patent 10,495,713 Comprehensive cardiovascular analysis with volumetric phase-contrast MRI", Leland Stanford Junior University, Dec 3, 2019
- Shreyas Vasanawala, Joseph Cheng, John Pauly. "United States Patent 10,393,842 Highly-scalable image reconstruction using deep convolutional neural networks with bandpass filtering", Leland Stanford Junior University, Aug 27, 2019

- Shreyas Vasanawala, Tao Zhang, Yuxin Chen, John Pauly. "United States Patent 10,338,174 Robust Dual Echo Dixon Imaging with Flexible Echo Times", Leland Stanford Junior University, Jul 2, 2019
- Shreyas Vasanawala, Joseph Cheng, John Pauly, Marcus Alley, Michael Lustig. "United States Patent 10,132,902 Intrinsic navigation from velocity-encoding gradients in phase-contrast MRI", Leland Stanford Junior University, Regents of the University of California, Nov 20, 2018
- Shreyas Vasanawala. "United States Patent 10,132,902 Intrinsic navigation from velocity-encoding gradients in phase-contrast MRI", Leland Stanford Junior University, UC Berkeley, Nov 20, 2018
- Shreyas Vasanawala, Valentina Taviani, Brian Hargreaves, Bruce Daniel, Suchandrima Banerjee. "United States Patent 10,114,099 High resolution magnetic resonance imaging with reduced distortion based on reduced-field-of-view and generalized parallel imaging", Leland Stanford Junior University, Oct 30, 2018
- Shreyas Vasanawala, Tao Zhang, John Pauly, Yuxin Chen, Joseph Cheng. "United States Patent 9,857,446 Robust self-navigating MRI using large coil arrays", Leland Stanford Junior University, Jan 2, 2018
- Shreyas Vasanawala, Joseph Cheng, John Pauly, Michael Lustig. "United States Patent 9,797,974 Nonrigid motion correction in 3D using autofocusing with localized linear translations", Leland Stanford Junior University, Regents of University of California, Oct 24, 2017
- Shreyas Vasanawala, Fraser Robb, Greig Scott. "United States Patent 9,726,737 Radio-frequency coil arrays and methods of arranging the same", General Electric Company, Aug 8, 2017
- Shreyas Vasanawala, Tao Zhang, Joseph Cheng, John Pauly. "United States Patent 9,535,148 Dynamic contrast enhanced magnetic resonance imaging with high spatial-temporal resolution", Leland Stanford Junior University, Jan 3, 2017
- Shreyas Vasanawala, Albert Hsiao, Marcus Alley. "United States Patent 9,513,357 Comprehensive cardiovascular analysis with volumetric phase-contrast MRI", Leland Stanford Junior University, Dec 6, 2016
- Shreyas Vasanawala, Thomas Grafendorfer, Paul Calderon, Fraser Robb, James Tropp, Greig Scott. "United States Patent 8,791,696 System and method providing preamplifier feedback for magnetic resonance imaging", General Electric Company, Jul 29, 2014
- Shreyas Vasanawala, Tao Zhang, Michael Lustig, John Pauly. "United States Patent 8,538,115 Coil compression for three dimensional autocalibrating parallel imaging with cartesian sampling", Leland Stanford Junior University, Sep 17, 2013
- Shreyas Vasanawala, Brian Hargreaves. "United States Patent 6,922,054 Steady state free precession magnetic resonance imaging using phase detection of material separation", Leland Stanford Junior University, Jul 26, 2005
- Shreyas Vasanawala, Brian Hargreaves, John Pauly, Dwight Nishimura. "United States Patent 6,452,387 Catalyzing the transient response in steady-state MRI sequences", Leland Stanford Junior University, Sep 17, 2002
- Shreyas Vasanawala, John Pauly, Dwight Nishimura. "United States Patent 6,307,368 Linear combination steady-state free precession MRI", Leland Stanford Junior University, Oct 23, 2001

LINKS

- Webpage: http://bodymri.stanford.edu/shreyasvasanawala

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our group is focused on developing new MRI techniques, and in particular, developing novel applications for children. We take a comprehensive approach, exploring novel hardware, data acquisition, image reconstruction, and image analysis techniques. These approaches are then evaluated for cardiovascular, abdominal, and musculoskeletal pediatric MRI exams. Additionally, we seek to develop quantitative MRI methods, including those for cardiovascular function, renal function, and tumor perfusion.

CLINICAL TRIALS

- An Open-label Study Comparing Lutetium (177Lu) Vipivotide Tetraxetan Versus Observation in PSMA Positive OMPC., Recruiting
- Confounder-Corrected Quantitative MRI Biomarker of Hepatic Iron Content, Not Recruiting
- Safety and Diagnostic Efficacy of Mangoral in Participants With Focal Liver Lesions and Reduced Kidney Function, Not Recruiting

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Minhye Kim, Liliana Ma, Shreya Ramachandran

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biophysics (PhD Program)

Publications

PUBLICATIONS

- **Augmented 3T imaging performance of the Temporomandibular joint using wireless resonators.** *Journal of magnetic resonance (San Diego, Calif. : 1997)*
  Lee, W., Zhang, F., Pauly, J., Scott, G., Vasanawala, S., Syed, A.
  2026; 391: 108144

- **Improved SNR and Image Quality of Pediatric MRI with a Shape Conforming High-Density Posterior Cushion Coil.** *Bioengineering (Basel, Switzerland)*
  Jao, T., Jayapal, P., Vincent, J., Pauly, J., Stack, C., Taracila, V., Robb, F., Grafendorfer, T., Stickle, Y. J., Giancola, M., Follante, C. K., Scott, G., Vasanawala, et al
  2026; 13 (8)

- **Arc-ZTE: Continuously-Slewed Zero-TE Imaging With Incoherent Temporal Sampling for Near-Silent Dynamic MRI.** *Magnetic resonance in medicine*
  Ramachandran, S., Wood, T. C., Zhang, G., Syed, A. B., Vasanawala, S. S., Lustig, M.
  2026

- **Semi-supervision for clinical contrast-weighted image synthesis from magnetic resonance fingerprinting.** *Magma (New York, N.Y.)*
  Yurt, M., Alkan, C., Cao, X., Liao, C., Zhou, Z., Cukur, T., Syed, A., Pauly, J., Vasanawala, S., Setsompop, K.
  2026

- **DM-Net: a physics-model-independent direct mapping approach for calibration-free multi-coil MRI.** *Research square*
  Wu, Y., Alkan, C., Oscanoa, J., Sun, A., Setsompop, K., Syed, A., Ma, Y., Liao, C., Alley, M., Zhang, F., Pauly, J., Vasanawala, S.
  2025

- **External Validation of an Upgraded AI Model for Screening Ileocolic Intussusception Using Pediatric Abdominal Radiographs: Multicenter Retrospective Study.** *Journal of medical Internet research*
  Lee, J. H., Kim, P. H., Son, N., Han, K., Kang, Y., Jeong, S., Kim, E., Yoon, H., Gatidis, S., Vasanawala, S., Yoon, H. M., Shin, H. J.
  2025; 27: e72097

- **Using deep feature distances for evaluating the perceptual quality of MR image reconstructions.** *Magnetic resonance in medicine*
  Adamson, P. M., Desai, A. D., Dominic, J., Varma, M., Bluethgen, C., Wood, J. P., Syed, A. B., Boutin, R. D., Stevens, K. J., Vasanawala, S., Pauly, J. M., Gunel, B., Chaudhari, et al
  2025

- **A 60-channel high-density flexible receive array for pediatric abdominal MRI.** *Magnetic resonance in medicine*
  Lee, W., Stickle, Y., Follante, C., Grafendorfer, T., Yang, T., Robb, F., Zhang, F., Pauly, J., Scott, G., Vasanawala, S., Syed, A.
  2025

- **MRI Retrospective Respiratory Gating and Cardiac Sensing by CW Doppler Radar: A Feasibility Study** *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING*
  Lee, W., Ryu, K., Li, Z., Oscanoa, J., Wu, Y., Robb, F., Vasanawala, S., Pauly, J., Scott, G.
  2025; 72 (1): 112-122

- **JOINT OPTIMIZATION OF SAMPLING PATTERN AND RECONSTRUCTION FOR DYNAMIC MRI**
  Alkan, C., Oscanoa, J., Zhu, X., Syed, A., Vasanawala, S., Pauly, J., IEEE
  IEEE.2025

- **Foundation Models for Multimodal MRI Synthesis with Language Guidance**
  Yurt, M., Cao, X., Zhou, Z., Setsompop, K., Vasanawala, S., Pauly, J., IEEE COMPUTER SOC
  IEEE COMPUTER SOC.2025: 6818-6823

- **Optimizing adult-oriented artificial intelligence for pediatric chest radiographs by adjusting operating points.** *Scientific reports*
  Shin, H. J., Han, K., Son, N. H., Kim, E. K., Kim, M. J., Gatidis, S., Vasanawala, S.

2024; 14 (1): 31329

- **The Impact of Artificial Intelligence on Radiologists' Reading Time in Bone Age Radiograph Assessment: A Preliminary Retrospective Observational Study.** *Journal of imaging informatics in medicine*
  Jeong, S., Han, K., Kang, Y., Kim, E. K., Song, K., Vasanawala, S., Shin, H. J.
  2024
- **Multicenter, multivendor validation of liver quantitative susceptibility mapping in patients with iron overload at 1.5T and 3T.** *Magnetic resonance in medicine*
  Buelo, C. J., Velikina, J., Mao, L., Zhao, R., Yuan, Q., Ghasabeh, M. A., Ruschke, S., Karampinos, D. C., Harris, D. T., Mattison, R. J., Jeng, M. R., Pedrosa, I., Kamel, et al
  2024
- **AutoSamp: Autoencoding k-space Sampling via Variational Information Maximization for 3D MRI.** *IEEE transactions on medical imaging*
  Alkan, C., Mardani, M., Liao, C., Li, Z., Vasanawala, S. S., Pauly, J. M.
  2024; PP
- **Distortionless, free-breathing, and respiratory resolved 3D diffusion weighted imaging of the abdomen.** *Magnetic resonance in medicine*
  Lee, P. K., Zhou, X., Wang, N., Syed, A. B., Brunsing, R. L., Vasanawala, S. S., Hargreaves, B. A.
  2024
- **Prospective Comparison of 68Ga-NeoB and 68Ga-PSMA-R2 PET/MRI in Patients with Biochemically Recurrent Prostate Cancer.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*
  Duan, H., Song, H., Davidzon, G. A., Moradi, F., Liang, T., Loening, A., Vasanawala, S., Iagaru, A.
  2024
- **Practical Application of Multivendor MRI-Based R2* Mapping for Liver Iron Quantification at 1.5 T and 3.0 T.** *Journal of magnetic resonance imaging : JMRI*
  Simchick, G., Zhao, R., Yuan, Q., Ghasabeh, M. A., Ruschke, S., Karampinos, D. C., Harris, D. T., do Vale Souza, R., Mattison, R. J., Jeng, M. R., Pedrosa, I., Kamel, I. R., Vasanawala, et al
  2024
- **Clinical Applications of Gadopiclenol in Pediatric MRI** *APPLIED RADIOLOGY*
  Vasanawala, S.
  2024; 53 (2): 1-8
- **68Ga-RM2 PET-MRI versus MRI alone for evaluation of patients with biochemical recurrence of prostate cancer: a single-centre, single-arm, phase 2/3 imaging trial.** *The Lancet. Oncology*
  Duan, H., Moradi, F., Davidzon, G. A., Liang, T., Song, H., Loening, A. M., Vasanawala, S., Srinivas, S., Brooks, J. D., Hancock, S., Iagaru, A.
  2024
- **Coil sketching for computationally efficient MR iterative reconstruction.** *Magnetic resonance in medicine*
  Oscanoa, J. A., Ong, F., Iyer, S. S., Li, Z., Sandino, C. M., Ozturkler, B., Ennis, D. B., Pilanci, M., Vasanawala, S. S.
  2023
- **Accelerating High b-Value Diffusion-Weighted MRI Using a Convolutional Recurrent Neural Network (CRNN-DWI).** *Bioengineering (Basel, Switzerland)*
  Zhong, Z., Ryu, K., Mao, J., Sun, K., Dan, G., Vasanawala, S. S., Zhou, X. J.
  2023; 10 (7)
- **Noise2Recon: Enabling SNR-robust MRI reconstruction with semi-supervised and self-supervised learning.** *Magnetic resonance in medicine*
  Desai, A. D., Ozturkler, B. M., Sandino, C. M., Boutin, R., Willis, M., Vasanawala, S., Hargreaves, B. A., Re, C., Pauly, J. M., Chaudhari, A. S.
  2023
- **Motion-compensated low-rank reconstruction for simultaneous structural and functional UTE lung MRI.** *Magnetic resonance in medicine*
  Tan, F., Zhu, X., Chan, M., Zapala, M. A., Vasanawala, S. S., Ong, F., Lustig, M., Larson, P. E.
  2023
- **Deep Learning-Based Reconstruction for Cardiac MRI: A Review.** *Bioengineering (Basel, Switzerland)*
  Oscanoa, J. A., Middione, M. J., Alkan, C., Yurt, M., Loecher, M., Vasanawala, S. S., Ennis, D. B.
  2023; 10 (3)

- **Automated MRI Field of View Prescription from Region of Interest Prediction by Intra-Stack Attention Neural Network.** *Bioengineering (Basel, Switzerland)*
  Lei, K., Syed, A. B., Zhu, X., Pauly, J. M., Vasanawala, S. V.
  2023; 10 (1)
- **SLfRank: Shinnar-Le-Roux Pulse Design with Reduced Energy and Accurate Phase Profiles using Rank Factorization.** *IEEE transactions on medical imaging*
  Ong, F., Zhong, Z., Liao, C., Lustig, M., Vasanawala, S. S., Pauly, J. M.
  2022; PP
- **Validation of liver quantitative susceptibility mapping across imaging parameters at 1.5 T and 3.0 T using SQUID susceptometry as reference.** *Magnetic resonance in medicine*
  Zhao, R., Velikina, J., Reeder, S. B., Vasanawala, S., Jeng, M., Hernando, D.
  2022
- **Editorial for "Gradual Self Training via Confidence and Volume Based Domain Adaptation for Multi Dataset Deep-Learning Based Brain Metastases Detection Using Non-Local Networks on MRI Images".** *Journal of magnetic resonance imaging : JMRI*
  Chen, F., Vasanawala, S. S.
  2022
- **Deep Learning-Based Water-Fat Separation from Dual-Echo Chemical Shift-Encoded Imaging.** *Bioengineering (Basel, Switzerland)*
  Wu, Y., Alley, M., Li, Z., Datta, K., Wen, Z., Sandino, C., Syed, A., Ren, H., Xing, L., Lustig, M., Pauly, J., Vasanawala, S.
  2022; 9 (10)
- **Multicenter Reproducibility of Liver Iron Quantification with 1.5-T and 3.0-T MRI.** *Radiology*
  Hernando, D., Zhao, R., Yuan, Q., Aliyari Ghasabeh, M., Ruschke, S., Miao, X., Karampinos, D. C., Mao, L., Harris, D. T., Mattison, R. J., Jeng, M. R., Pedrosa, I., Kamel, et al
  2022: 213256
- **Accelerated two-dimensional phase-contrast for cardiovascular MRI using deep learning-based reconstruction with complex difference estimation.** *Magnetic resonance in medicine*
  Oscanoa, J. A., Middione, M. J., Syed, A. B., Sandino, C. M., Vasanawala, S. S., Ennis, D. B.
  2022
- **A Semi-Blind Calibration and Compensation Method for Dynamic Range Recovery of Low-Power Pre-Amplifiers in MRI Receive Chains.** *IEEE transactions on medical imaging*
  Vassos, C., Robb, F., Vasanawala, S., Pauly, J., Scott, G.
  2022; PP
- **Rapid fat-water separated T1 mapping using a single shot radial inversion-recovery spoiled gradient recalled pulse sequence.** *NMR in biomedicine*
  Li, Z., Mathew, M., Syed, A. B., Feng, L., Brunsing, R., Pauly, J. M., Vasanawala, S. S.
  2022
- **Improving high frequency image features of deep learning reconstructions via k-space refinement with null-space kernel.** *Magnetic resonance in medicine*
  Ryu, K., Alkan, C., Vasanawala, S. S.
  2022
- **William H. Northway, MD (1932-2022).** *Pediatric radiology*
  Vasanawala, S. S., Barth, R. A., Parker, B. R.
  2022
- **Artifact- and content-specific quality assessment for MRI with image rulers.** *Medical image analysis*
  Lei, K., Syed, A. B., Zhu, X., Pauly, J. M., Vasanawala, S. S.
  1800; 77: 102344
- **Volumetric and multispectral DWI near metallic implants using a non-linear phase Carr-Purcell-Meiboom-Gill diffusion preparation.** *Magnetic resonance in medicine*
  Lee, P. K., Yoon, D., Sandberg, J. K., Vasanawala, S. S., Hargreaves, B. A.
  1800

- **Scale-Equivariant Unrolled Neural Networks for Data-Efficient Accelerated MRI Reconstruction**
  Gunel, B., Sahiner, A., Desai, A. D., Chaudhari, A. S., Vasanawala, S., Pilanci, M., Pauly, J.
  edited by Wang, L., Dou, Q., Fletcher, P. T., Speidel, S., Li, S.
  SPRINGER INTERNATIONAL PUBLISHING AG.2022: 737-747

- **Learned Compression of High Dimensional Image Datasets**
  Cole, E., Meng, Q., Pauly, J., Vasanawala, S., IEEE
  IEEE.2022: 1747-1751

- **Left Subclavian Artery Isolation with Right Aortic Arch and D-Transposition of the Great Arteries.** *CASE (Philadelphia, Pa.)*
  Hansen, K., Dhillon, G., Ma, M., Maskatia, S. A., Su, L., Vasanawala, S., Punn, R.
  1800; 5 (6): 392-398

- **Deep Learning Automated Background Phase Error Correction for Abdominopelvic 4D Flow MRI.** *Radiology*
  You, S., Masutani, E. M., Alley, M. T., Vasanawala, S. S., Taub, P. R., Liau, J., Roberts, A. C., Hsiao, A.
  2021: 211270

- **Multi-Center, Multi-Vendor Reproducibility and Calibration of MRI-Based R2*for Liver Iron Quantification**
  Hernando, D., Zhao, R., Yuan, Q., Ghasabeh, M., Ruschke, S., Miao, X., Karampinos, D. C., Mao, L., Harris, D. T., Kamel, R. R., Vasanawala, S., Yokoo, T., Reeder, et al
  AMER SOC HEMATOLOGY.2021

- **Zero echo time pediatric musculoskeletal magnetic resonance imaging: initial experience.** *Pediatric radiology*
  Sandberg, J. K., Young, V. A., Yuan, J., Hargreaves, B. A., Wishah, F., Vasanawala, S. S.
  2021

- **Free-breathing Accelerated Cardiac MRI Using Deep Learning: Validation in Children and Young Adults.** *Radiology*
  Zucker, E. J., Sandino, C. M., Kino, A., Lai, P., Vasanawala, S. S.
  2021: 202624

- **Structural Heart 4D Flow MRI for Hemodynamic Assessment: How We Do It.** *AJR. American journal of roentgenology*
  Jacobs, K., Hahn, L., Horowitz, M., Kligerman, S., Vasanawala, S., Hsiao, A.
  2021

- **Practical protocol for lung magnetic resonance imaging and common clinical indications.** *Pediatric radiology*
  Sodhi, K. S., Ciet, P., Vasanawala, S., Biederer, J.
  2021

- **Integrating neuroimaging biomarkers into the multicentre, high-dose erythropoietin for asphyxia and encephalopathy (HEAL) trial: rationale, protocol and harmonisation.** *BMJ open*
  Wisnowski, J. L., Bluml, S., Panigrahy, A., Mathur, A. M., Berman, J., Chen, P. K., Dix, J., Flynn, T., Fricke, S., Friedman, S. D., Head, H. W., Ho, C. Y., Kline-Fath, et al
  2021; 11 (4): e043852

- **Quantification of the Hemodynamic Changes of Cirrhosis with Free-Breathing Self-Navigated MRI.** *Journal of magnetic resonance imaging : JMRI*
  Brunsing, R. L., Brown, D., Almahoud, H., Kono, Y., Loomba, R., Vodkin, I., Sirlin, C. B., Alley, M. T., Vasanawala, S. S., Hsiao, A.
  2021

- **Analysis of deep complex-valued convolutional neural networks for MRI reconstruction and phase-focused applications.** *Magnetic resonance in medicine*
  Cole, E. n., Cheng, J. n., Pauly, J. n., Vasanawala, S. n.
  2021

- **Memory-Efficient Learning for High-Dimensional MRI Reconstruction**
  Wang, K., Kellman, M., Sandino, C. M., Zhang, K., Vasanawala, S. S., Tamir, J., Yu, S. X., Lustig, M.
  edited by deBruijne, M., Cattin, P. C., Cotin, S., Padoy, N., Speidel, S., Zheng, Y., Essert, C.
  SPRINGER INTERNATIONAL PUBLISHING AG.2021: 461-470

- **Upstream Machine Learning in Radiology.** *Radiologic clinics of North America*

Sandino, C. M., Cole, E. K., Alkan, C., Chaudhari, A. S., Loening, A. M., Hyun, D., Dahl, J., Imran, A. A., Wang, A. S., Vasanawala, S. S.
2021; 59 (6): 967-985

- **Evaluation of Patient Positioning to Mitigate RF-induced Heating of Cardiac Implantable Electronic Devices for Pediatric MRI Exams.** *Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual International Conference*
  Martinez, J. A., Cork, T. E., Chubb, H., Vasanawala, S., Ennis, D. B.
  2021; 2021: 5027-5030
- **K-space refinement in deep learning MR reconstruction via regularizing scan specific SPIRiT-based self consistency**
  Ryu, K., Alkan, C., Choi, C., Jang, I., Vasanawala, S., IEEE Comp Soc
  IEEE COMPUTER SOC.2021: 3991-4000
- **Fast Unsupervised MRI Reconstruction Without Fully-Sampled Ground Truth Data Using Generative Adversarial Networks**
  Cole, E. K., Ong, F., Vasanawala, S. S., Pauly, J. M., IEEE Comp Soc
  IEEE COMPUTER SOC.2021: 3971-3980
- **Free-breathing R 2 # mapping of hepatic iron overload in children using 3D multi-echo UTE cones MRI.** *Magnetic resonance in medicine*
  Kee, Y. n., Sandino, C. M., Syed, A. B., Cheng, J. Y., Shimakawa, A. n., Colgan, T. J., Hernando, D. n., Vasanawala, S. S.
  2021
- **Wasserstein GANs for MR Imaging: From Paired to Unpaired Training** *IEEE TRANSACTIONS ON MEDICAL IMAGING*
  Lei, K., Mardani, M., Pauly, J. M., Vasanawala, S. S.
  2021; 40 (1): 105–15
- **Uncertainty Quantification in Deep MRI Reconstruction** *IEEE TRANSACTIONS ON MEDICAL IMAGING*
  Edupuganti, V., Mardani, M., Vasanawala, S., Pauly, J.
  2021; 40 (1): 239–50
- **Accelerating cardiac cine MRI using a deep learning-based ESPIRiT reconstruction.** *Magnetic resonance in medicine*
  Sandino, C. M., Lai, P., Vasanawala, S. S., Cheng, J. Y.
  2020
- **Rosette Trajectories Enable Ungated, Motion-Robust, Simultaneous Cardiac and Liver T2 * Iron Assessment.** *Journal of magnetic resonance imaging : JMRI*
  Bush, A. M., Sandino, C. M., Ramachandran, S., Ong, F., Dwork, N., Zucker, E. J., Syed, A. B., Pauly, J. M., Alley, M. T., Vasanawala, S. S.
  2020: e27196
- **Direct measurement of atrioventricular valve regurgitant jets using 4D flow cardiovascular magnetic resonance is accurate and reliable for children with congenital heart disease: a retrospective cohort study.** *Journal of cardiovascular magnetic resonance : official journal of the Society for Cardiovascular Magnetic Resonance*
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