

# Matthew J. Muckley

Research Engineer  
Meta AI

## Education

### University of Michigan, Ann Arbor, MI

Ph.D., Biomedical Engineering	Apr., 2016
M.S.E., Electrical Engineering: Systems	Dec., 2014
M.S., Biomedical Engineering	May, 2013

Dissertation: Acceleration Methods for MRI  
Advisers: Jeffrey A. Fessler and Douglas C. Noll  
Apr., 2016

### Purdue University, West Lafayette, IN

B.S., Biomedical Engineering	May, 2011
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## Research Positions

### Research Engineer, Meta AI, New York, NY

Feb., 2020 - Present

- Developed a new ILLM adversarial model for enhancing the quality of compressed images.
- Open-sourced NeuralCompression, a library for compression with neural networks.
- Developed a self-supervised method for predicting deterioration in COVID patients.
- Organized and executed the 2020 fastMRI Reconstruction Challenge.

### Research Scientist, NYU School of Medicine, New York, NY

Jan., 2018 - Jan., 2020

- Built torchkbnufft, a high-level, non-uniform FFT open-source package in PyTorch.
- Published dldegibbs, a simulation-based deep learning noise and Gibbs correction technique.
- Processed and published the fastMRI MRI knee raw k-space data set (1,594 k-space volumes).

### Postdoctoral Research Fellow, NYU School of Medicine, New York, NY

Jun., 2016 - Jan., 2018

- Implemented a reconstruction pipeline for an interrupted-beam x-ray CT prototype system.

### Graduate Student, University of Michigan, Ann Arbor, MI

Aug., 2011 - Apr., 2016

- Created BARISTA, a fast algorithm for subsampled MR image reconstruction.
- Wrote an image processing method for assessing collagen fibril disorder in 2,000 AFM images.
- Programmed and tested pulse sequences for fMRI data acquisition.

### Undergraduate Student, Purdue University, West Lafayette, IN

May, 2009 - Aug., 2011

- Built a processing pipeline for quantifying geometric properties in femurs from 336 micro-CTs.
- Implemented a processing pipeline for fMRI data analysis on 24 subjects.
- Assessed the use of a hyperspectral imaging method for measuring nanoscale bone deformation.

## Teaching Experience

### New York University, New York, NY

<u>Course Number</u>	<u>Title</u>	<u>Role</u>	<u>Enrl</u>	<u>Term</u>	<u>Year</u>
BMSC-GA 4428	Practical MRI II	Lab. Asst.	4	Fall	2019
BMSC-GA 4428	Practical MRI II	Lab. Asst.	3	Fall	2018
BMSC-GA 4428	Practical MRI II	Lab. Asst.	2	Fall	2016

### University of Michigan, Ann Arbor, MI

<u>Course Number</u>	<u>Title</u>	<u>Role</u>	<u>Enrl</u>	<u>Term</u>	<u>Year</u>
BIOMEDE 516	Medical Imaging Systems	Guest Lecturer	22	Fall	2015
BIOMEDE 503	Stat. Meth. for Biomed. Eng.	Grad. Stud. Inst.	94	Winter	2015
BIOMEDE 516	Medical Imaging Systems	Guest Lecturer	19	Fall	2014
BIOMEDE 499	Training Course in fMRI	Lab. Asst.	60	Fall	2014
BIOMEDE 499	Training Course in fMRI	Lab. Asst.	60	Fall	2013
EECS 556	Image Processing	Guest Lecturer	22	Winter	2013
BIOMEDE 510	Medical Imaging Laboratory	Grad. Stud. Inst.	13	Winter	2013
BIOMEDE 499	Training Course in fMRI	Lab. Asst.	60	Fall	2012

## Honors and Awards

Summa Cum Laude Abstract Award, ISMRM, for "Results of the 2020..."	May, 2021
Cum Laude Award, SCBT-MR Workshop	Oct., 2018
Rackham Predoctoral Fellowship	May, 2015 - May, 2016
Grad. Asst. in Areas of National Need (GAANN) Fellowship	Sep., 2012 - May, 2013
First Place, Michigan KLA-Tencor Image Processing Contest	Apr., 2012
Rollin M. Gerstacker Foundation Fellowship	Sep., 2011 - Aug., 2012
Graduated With Distinction, Purdue University	May, 2011
Dean's List and Semester Honors, Purdue University (8 semesters)	Dec., 2007 - May, 2011
Member, Alpha Eta Mu Beta BME Honor Society	Dec., 2010
Member, Tau Beta Pi Engineering Honor Society	Mar., 2009

## Service/Affiliations

### Professional Societies

Member, ISMRM	Nov., 2021 - Present
Member, IEEE	Jul., 2014 - Dec. 2021
Trainee Member, ISMRM	May, 2012 - Dec., 2020
Member, BME Graduate Student Council, University of Michigan	Jun., 2013 - Apr., 2016
President, BME Graduate Student Council, University of Michigan	Aug., 2014 - Oct., 2015

## Reviews

*Listed by time of first review*

International Conference on Learning Representations	Oct., 2022
Radiology: Artificial Intelligence	Apr., 2022
International Conference on Machine Learning	Mar., 2022
Advances in Neural Information Processing Systems	Jun., 2021
Medical Physics	Jun., 2021
American Journal of Neuroradiology	Feb., 2021
IEEE Transactions on Computational Imaging	Jul., 2019
Nature Scientific Reports	May, 2019
Physics in Medicine and Biology	Apr., 2018
Magnetic Resonance in Medicine	Oct., 2017
Journal of Magnetic Resonance Imaging	Feb., 2017
IEEE Transactions on Signal Processing	Jun., 2016
IET Image Processing	Feb., 2016
Journal of Biomedical Signal Processing and Control	Jul., 2015
IEEE Journal of Selected Topics in Signal Processing	May, 2015
IEEE Transactions on Medical Imaging	Nov., 2013

## Open-Source Repositories

*List of repositories with major contributions.*

**fastMRI:** A large-scale dataset of raw MRI measurements and code for training DNN models.  
<https://github.com/facebookresearch/fastMRI>

**NeuralCompression:** A collection of tools for neural compression enthusiasts.  
<https://github.com/facebookresearch/NeuralCompression>

**torchkbnufft:** A robust, easy-to-deploy non-uniform Fast Fourier Transform in PyTorch.  
<https://github.com/mmuckley/torchkbnufft>

**CovidPrognosis:** COVID patient deterioration prediction via deep learning on X-ray images.  
<https://github.com/facebookresearch/CovidPrognosis>

**dldegibbs:** Deep learning models for Gibbs artifact and noise removal in diffusion MRI.  
<https://github.com/mmuckley/dldegibbs>

## Publications

### Preprints

1. Mahmoud Assran, Adrien Bardes, David Fan, Quentin Garrido, Russell Howes, Mojtaba Komeili, Matthew Muckley, Ammar Rizvi, Claire Roberts, Koustuv Sinha, et al. *V-JEPA 2: Self-Supervised Video Models Enable Understanding, Prediction and Planning*. Tech. rep. FAIR at Meta, 2025.
2. Revant Teotia, Candace Ross, Karen Ullrich, Sumit Chopra, Adriana Romero-Soriano, Melissa Hall, and Matthew J. Muckley. *DIMCIM: A Quantitative Evaluation Framework for Default-mode Diversity and Generalization in Text-to-Image Generative Models*. 2025. arXiv: 2506.05108 [cs.CV]. URL: <https://arxiv.org/abs/2506.05108>.
3. Daniel Severo, Giuseppe Ottaviano, Matthew Muckley, Karen Ullrich, and Matthijs Douze. *Lossless Compression of Vector IDs for Approximate Nearest Neighbor Search*. 2025. arXiv: 2501.10479 [cs.LG].
4. Pietro Astolfi, Marlene Careil, Melissa Hall, Oscar Mañas, Matthew Muckley, Jakob Verbeek, Adriana Romero Soriano, and Michal Drozdal. *Consistency-diversity-realism Pareto fronts of conditional image generative models*. 2024. arXiv: 2406.10429 [cs.CV].
5. Théo Moutakanni, Piotr Bojanowski, Guillaume Chassagnon, Céline Hudelot, Armand Joulin, Yann LeCun, Matthew Muckley, Maxime Oquab, Marie-Pierre Revel, and Maria Vakalopoulou. *Advancing human-centric AI for robust X-ray analysis through holistic self-supervised learning*. 2024. arXiv: 2405.01469 [cs.CV].
6. Ricky T. Q. Chen, Matthew Le, Matthew Muckley, Maximilian Nickel, and Karen Ullrich. *Latent Discretization for Continuous-time Sequence Compression*. 2022. arXiv: 2212.13659 [cs.LG].
7. Anuroop Sriram, Matthew Muckley, Koustuv Sinha, Farah Shamout, Joelle Pineau, Krzysztof J. Geras, Lea Azour, Yindalon Aphinyanaphongs, Nafissa Yakubova, and William Moore. *COVID-19 Prognosis via Self-Supervised Representation Learning and Multi-Image Prediction*. 2021. arXiv: 2101.04909 [cs.CV].
8. Jure Zbontar, Florian Knoll, Anuroop Sriram, Tullie Murrell, Zhengnan Huang, Matthew J. Muckley, Aaron Defazio, Ruben Stern, Patricia Johnson, Mary Bruno, et al. *fastMRI: An Open Dataset and Benchmarks for Accelerated MRI*. 2018. arXiv: 1811.08839 [cs.CV].

### Book Chapters

1. L. Hernandez-Garcia and M. J. Muckley. “fMRI artifacts and their correction”. In: *Brain Mapping: An Encyclopedic Reference*. Ed. by A. W. Toga. Elsevier, 2015.

### Journal Articles

1. Ashwini Pople, Matthew J. Muckley, Ricky T. Q. Chen, and Brian Karrer. “Training-free linear image inverses via flows”. In: *Transactions on Machine Learning Research* (2023).

2. Ilias I Giannakopoulos, Matthew J Muckley, Jesi Kim, Matthew Breen, Patricia M Johnson, Yvonne W Lui, and Riccardo Lattanzi. "Accelerated MRI reconstructions via variational network and feature domain learning". In: *Scientific Reports* 14.1 (2024), p. 10991. DOI: <https://doi.org/10.1038/s41598-024-59705-0>.
3. Alaaeldin El-Nouby, Matthew J. Muckley, Karen Ullrich, Ivan Laptev, Jakob Verbeek, and Hervé Jégou. "Image Compression with Product Quantized Masked Image Modeling". In: *Transactions on Machine Learning Research* (2023).
4. Patricia M. Johnson, Dana J. Lin, Jure Zbontar, C. Lawrence Zitnick, Anuroop Sriram, Matthew Muckley, James S. Babb, Mitchell Kline, Gina Ciavarra, Erin Alaia, et al. "Deep Learning Reconstruction Enables Prospectively Accelerated Clinical Knee MRI". in: *Radiology* 307.2 (2023), e220425. DOI: 10.1148/radiol.220425.
5. Alireza Radmanesh, Matthew J. Muckley, Tullie Murrell, Emma Lindsey, Anuroop Sriram, Florian Knoll, Daniel K. Sodickson, and Yvonne W. Lui. "Exploring the Acceleration Limits of Deep Learning Variational Network-based Two-dimensional Brain MRI". in: *Radiology: Artificial Intelligence* 4.6 (2022), e210313. DOI: 10.1148/ryai.210313.
6. Matthew J. Muckley, Bruno Riemenschneider, Alireza Radmanesh, Sunwoo Kim, Geunu Jeong, Jingyu Ko, Yohan Jun, Hyungseob Shin, Dosik Hwang, Mahmoud Mostapha, et al. "Results of the 2020 fastMRI Challenge for Machine Learning MR Image Reconstruction". In: *IEEE Transactions on Medical Imaging* 40.9 (2021), pp. 2306–2317. DOI: 10.1109/TMI.2021.3075856.
7. Matthew J Muckley, Benjamin Ades-Aron, Antonios Papaioannou, Gregory Lemberskiy, Eddy Solomon, Yvonne W Lui, Daniel K Sodickson, Els Fieremans, Dmitry S Novikov, and Florian Knoll. "Training a Neural Network for Gibbs and Noise Removal in Diffusion MRI". in: *Magnetic Resonance in Medicine* 85.1 (2021), pp. 413–428. DOI: 10.1002/mrm.28395.
8. Florian Knoll, Tullie Murrell, Anuroop Sriram, Nafissa Yakubova, Jure Zbontar, Michael Rabbat, Aaron Defazio, Matthew J. Muckley, Daniel K. Sodickson, C. Lawrence Zitnick, et al. "Advancing machine learning for MR image reconstruction with an open competition: Overview of the 2019 fastMRI challenge". In: *Magnetic Resonance in Medicine* 84.6 (2020), pp. 3054–3070. DOI: 10.1002/mrm.28338.
9. Michael P. Recht, Jure Zbontar, Daniel K. Sodickson, Florian Knoll, Nafissa Yakubova, Anuroop Sriram, Tullie Murrell, Aaron Defazio, Michael Rabbat, Leon Rybak, et al. "Using Deep Learning to Accelerate Knee MRI at 3 T: Results of an Interchangeability Study". In: *American Journal of Roentgenology* 215.6 (2020), pp. 1421–1429. DOI: 10.2214/AJR.20.23313.
10. Florian Knoll, Jure Zbontar, Anuroop Sriram, Matthew J Muckley, Mary Bruno, Aaron Defazio, Marc Parente, Krzysztof J Geras, Joe Katsnelson, Hersh Chandarana, et al. "fastMRI: A publicly available raw k-space and DICOM dataset of knee images for accelerated MR image reconstruction using machine learning". In: *Radiology: Artificial Intelligence* 2.1 (2020), e190007. DOI: 10.1148/ryai.2020190007.
11. Teodora Chitiboi, Matthew Muckley, Bari Dane, Chuanshu Huang, Li Feng, and Hersh Chandarana. "Pancreas deformation in the presence of tumors using feature tracking from

- free-breathing XD-GRASP MRI". in: *Journal of Magnetic Resonance Imaging* 50.5 (2019), pp. 1633–1640. DOI: 10.1002/jmri.26714.
12. Matthew J Muckley, Baiyu Chen, Thomas Vahle, Thomas O'Donnell, Florian Knoll, Aaron D Sodickson, Daniel K Sodickson, and Ricardo Otazo. "Image reconstruction for interrupted-beam x-ray CT on diagnostic clinical scanners". In: *Physics in Medicine and Biology* 64.15 (2019), p. 155007. DOI: 10.1088/1361-6560/ab2df1.
  13. Baiyu Chen, Erich Kobler, Matthew J Muckley, Aaron D Sodickson, Thomas O'Donnell, Thomas Flohr, Bernhard Schmidt, Daniel K Sodickson, and Ricardo Otazo. "SparseCT: System Concept and Design of Multislit Collimators". In: *Medical Physics* 46.6 (2019), pp. 2589–2599. DOI: 10.1002/mp.13544.
  14. Meagan A Cauble, Matthew J Muckley, Ming Fang, Jeffrey A Fessler, Kathleen Welch, Edward D Rothman, Bradford G Orr, Le T Duong, and Mark M Banaszak Holl. "Estrogen depletion and drug treatment alter the microstructure of type I collagen in bone". In: *Bone Reports* 5 (2016), pp. 243–251. DOI: 10.1016/j.bonr.2016.08.003.
  15. Matthew J Muckley, Douglas C Noll, and Jeffrey A Fessler. "Fast Parallel MR Image Reconstruction via B1-Based, Adaptive Restart, Iterative Soft Thresholding Algorithms (BARISTA)". in: *IEEE Transactions on Medical Imaging* 34.2 (2015), pp. 578–588. DOI: 10.1109/TMI.2014.2363034.
  16. Ziwei Zhong, Matthew Muckley, Serife Agcaoglu, Morgan E Grisham, Hansi Zhao, Michael Orth, Michael S Lilburn, Ozan Akkus, and Darrin M Karcher. "The morphological, material-level, and ash properties of turkey femurs from 3 different genetic strains during production". In: *Poultry Science* 91.11 (2012), pp. 2736–2746. DOI: 10.3382/ps.2012-02322.
  17. Zhengbin Xu, Xuanhao Sun, Jingjing Liu, Qinghai Song, Matthew Muckley, Ozan Akkus, and Young L Kim. "Spectroscopic visualization of nanoscale deformation in bone: interaction of light with partially disordered nanostructure". In: *Journal of Biomedical Optics* 15.6 (2010), p. 060503. DOI: 10.1117/2F1.3514633.

## **Conference Articles**

1. Théophane Vallaëys, Matthew J. Muckley, Jakob Verbeek, and Matthijs Douze. "Qinco2: Vector Compression and Search with Improved Implicit Neural Codebooks". In: *International Conference on Learning Representations*. 2025.
2. Buu Phan, Brandon Amos, Itai Gat, Marton Havasi, Matthew Muckley, and Karen Ullrich. "Exact Byte-Level Probabilities from Tokenized Language Models for FIM-Tasks and Model Ensembles". In: *International Conference on Learning Representations*. 2025.
3. Matthew Muckley, Marton Havasi, Jakob Verbeek, and Karen Ullrich. "Architecture Optimizations for Improving Neural Image Compression Compute Complexity". In: *Data Compression Conference*. 2025.
4. Daniel Severo, Jingtong Su, Anji Liu, Jeff Johnson, Brian Karrer, Guy Van den Broeck, Matthew Muckley, and Karen Ullrich. "Enhancing and Evaluating Probabilistic Circuits for High-Resolution Lossless Image Compression". In: *Data Compression Conference*. 2025.

5. Tariq Berrada, Pietro Astolfi, Melissa Hall, Reyhane Askari Hemmat, Yohann Benchetrit, Marton Havasi, Matthew J. Muckley, Karteek Alahari, Adriana Romero-Soriano, Jakob Verbeek, et al. "On improved Conditioning Mechanisms and Pre-training Strategies for Diffusion Models". In: *Annual Conference on Neural Information Processing Systems*. 2024.
6. Iris Huijben, Matthijs Douze, Matthew Muckley, Ruud van Sloun, and Jakob Verbeek. "Residual Quantization with Implicit Neural Codebooks". In: *Proceedings of the International Conference on Machine Learning*. 2024.
7. Marlène Careil, Matthew J. Muckley, Jakob Verbeek, and Stéphane Lathuilière. "Towards image compression with perfect realism at ultra-low bitrates". In: *International Conference on Learning Representations*. 2024.
8. Matthew J. Muckley, Alaaeldin El-Nouby, Karen Ullrich, Herve Jegou, and Jakob Verbeek. "Improving Statistical Fidelity for Neural Image Compression with Implicit Local Likelihood Models". In: *Proceedings of the International Conference on Machine Learning*. 2023, pp. 25426–25443.
9. Tim Bakker, Matthew Muckley, Adriana Romero-Soriano, Michal Drozdal, and Luis Pineda. "On learning adaptive acquisition policies for undersampled multi-coil MRI reconstruction". In: *Proceedings of the International Conference on Medical Imaging with Deep Learning*. 2022, pp. 63–85.
10. Zizhao Zhang, Adriana Romero, Matthew J Muckley, Pascal Vincent, Lin Yang, and Michal Drozdal. "Reducing Uncertainty in Undersampled MRI Reconstruction with Active Acquisition". In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2019, pp. 2049–2058.

### **Workshop and Short Proceedings Papers**

1. Buu Phan, Marton Havasi, Matthew Muckley, and Karen Ullrich. "Understanding and Mitigating Tokenization Bias in Language Models". In: *ICML 2024 Workshop on Theoretical Foundations of Foundation Models*. 2024.
2. Winnie Xu, Matthew J. Muckley, Yann Dubois, and Karen Ullrich. "Revisiting Associative Compression: I Can't Believe It's Not Better". In: *ICML 2023 Workshop Neural Compression: From Information Theory to Applications*. 2023.
3. Patricia M. Johnson, Geunu Jeong, Kerstin Hammernik, Jo Schlemper, Chen Qin, Jinming Duan, Daniel Rueckert, Jingu Lee, Nicola Pezzotti, Elwin De Weerd, et al. "Evaluation of the Robustness of Learned MR Image Reconstruction to Systematic Deviations Between Training and Test Data for the Models from the fastMRI Challenge". In: *International Workshop on Machine Learning for Medical Image Reconstruction*. 2021, pp. 25–34.
4. Shizhan Gong, Matthew Muckley, Nan Wu, Taro Makino, Gene S. Kim, Laura Heacock, Linda Moy, Florian Knoll, and Krzysztof J. Geras. "Large-scale classification of breast MRI exams using deep convolutional networks". In: *Medical Imaging Meets NeurIPS Workshop*. 2019.

5. Patricia M Johnson, Matthew J Muckley, Mary Bruno, Erich Kobler, Kerstin Hammernik, Thomas Pock, and Florian Knoll. "Joint Multi-anatomy Training of a Variational Network for Reconstruction of Accelerated Magnetic Resonance Image Acquisitions". In: *International Workshop on Machine Learning for Medical Image Reconstruction*. 2019, pp. 71–79.
6. Matthew J. Muckley, Baiyu Chen, Thomas O'Donnell, Matthias Berner, Thomas Allmendinger, Karl Stierstorfer, Thomas Flohr, Bernhard Schmidt, Aaron Sodickson, Daniel Sodickson, et al. "Reconstruction of reduced-dose SparseCT data acquired with an interrupted-beam prototype on a clinical scanner". In: *Proceedings of the International Meeting on Image Formation in X-ray Computed Tomography*. 2018, pp. 56–59.
7. Baiyu Chen, Matthew J. Muckley, Aaron Sodickson, Thomas O'Donnell, Matthias Berner, Thomas Allmendinger, Karl Stierstorfer, Thomas Flohr, Bernhard Schmidt, Daniel Sodickson, et al. "First multislit collimator prototype for SparseCT: design, manufacturing and initial validation". In: *Proceedings of the International Meeting on Image Formation in X-ray Computed Tomography*. 2018, pp. 52–55.
8. Erich Kobler, Matthew J. Muckley, Baiyu Chen, Florian Knoll, Kerstin Hammernik, Thomas Pock, Daniel K. Sodickson, and Ricardo Otazo. "Variational network learning for low-dose CT". in: *Proceedings of the International Meeting on Image Formation in X-ray Computed Tomography*. 2018, pp. 430–434.
9. Erich Kobler, Matthew Muckley, Baiyu Chen, Florian Knoll, Kerstin Hammernik, Thomas Pock, Daniel Sodickson, and Ricardo Otazo. "Variational deep learning for low-dose computed tomography". In: *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing*. 2018, pp. 6687–6691.
10. Baiyu Chen, Matthew Muckley, Aaron Sodickson, Thomas O'Donnell, Florian Knoll, Daniel Sodickson, and Ricardo Otazo. "Evaluation of SparseCT on patient data using realistic undersampling models". In: *SPIE Proceedings, Medical Imaging: Physics of Medical Imaging*. Vol. 10573. 2018, p. 1057342.
11. Matthew Muckley, Baiyu Chen, Thomas Vahle, Florian Knoll, Aaron Sodickson, Daniel K Sodickson, and Ricardo Otazo. "Regularizer performance for SparseCT image reconstruction with practical subsampling". In: *Proceedings of the International Meeting on Fully 3D Reconstruction in Radiology and Nuclear Medicine*. 2017, pp. 572–575.
12. Baiyu Chen, Matthew J. Muckley, Thomas O'Donnell, Aaron Sodickson, Thomas Flohr, Karl Stierstorfer, Bernhard Schmidt, Florian Knoll, Andrew Primak, David Faul, et al. "Realistic Undersampling Model for Compressed Sensing Using a Multi-slit Collimator". In: *Proceedings of the International Meeting on Fully 3D Reconstruction in Radiology and Nuclear Medicine*. 2017, pp. 314–317.
13. Matthew J Muckley and Jeffrey A Fessler. "Fast MR image reconstruction with orthogonal wavelet regularization via shift-variant shrinkage". In: *Proceedings of the IEEE International Conference on Image Processing*. 2014, pp. 3651–3655.



## Conference Abstracts

1. Ilias Giannakopoulos, Patricia Johnson, Riccardo Lattanzi, and Matthew Muckley. "Improving variational network based 2D MRI reconstruction via feature-space data consistency". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2023.
2. Florian Knoll, Matthew J. Muckley, Yvonne W. Lui, and Daniel K. Sodickson. "Insights into the reliability of deep learning reconstructions with research challenges". In: *Biomedical and Astronomical Signal Processing Frontiers*. 2023.
3. Ilias Giannakopoulos, Patricia Johnson, Riccardo Lattanzi, and Matthew Muckley. "Improving Variational Network Based 2D MRI Reconstruction via Feature-Space Data Consistency". In: *ISMRM Workshop on Data Sampling & Image Reconstruction*. 2023.
4. Matthew J. Muckley, Tullie Murrell, Alireza Radmanesh, Florian Knoll, Zhengnan Huang, Anuroop Sriram, Daniel K. Sodickson, and Yvonne W. Lui. "Properties of 2D MR image reconstructions with deep neural networks at high acceleration rates". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2022, p. 849.
5. Bruno Riemenschneider, Matthew J. Muckley, Alireza Radmanesh, Sunwoo Kim, Geunu Jeong, Jingyu Ko, Yohan Jun, Hyungseob Shin, Dosik Hwang, Mahmoud Mostapha, et al. "Results of the 2020 fastMRI Brain Reconstruction Challenge". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2021, p. 63.
6. Matthew J. Muckley, Tullie Murrell, Suvrat Booshan, Hersh Chandarana, Florian Knoll, and Daniel K. Sodickson. "Unsupervised Reconstruction of Continuous Dynamic Radial Acquisitions via CNN-NUFFT Self-Consistency". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2020, p. 3605.
7. Shizhan Gong, Matthew Muckley, Nan Wu, Taro Makino, Gene S. Kim, Laura Heacock, Linda Moy, Florian Knoll, and Krzysztof J. Geras. "Large-scale classification of breast MRI exams using deep convolutional networks". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2020, p. 569.
8. Tullie Murrell, Matthew J. Muckley, Florian Knoll, Hersh Chandarana, and Daniel K. Sodickson. "Self-Supervised Dynamic MR Image Reconstruction with a Sequence-to-Sequence NUFFT-CNN". in: *ISMRM Workshop on Data Sampling & Image Reconstruction*. 2020.
9. Matthew J. Muckley, Ruben Stern, Tullie Murrell, and Florian Knoll. "TorchKbNufft: A High-Level, Hardware-Agnostic Non-Uniform Fast Fourier Transform". In: *ISMRM Workshop on Data Sampling & Image Reconstruction*. 2020.
10. Matthew J. Muckley, Antonios Papaioannou, Benjamin Ades-Aron, Daniel K. Sodickson, Yvonne W. Lui, Els Fieremans, Dmitry S. Novikov, and Florian Knoll. "Learned Gibbs Removal in Partial Fourier Acquisitions for Diffusion MRI". in: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2019, p. 3402.
11. Florian Knoll, Matthew Muckley, Jure Zbontar, Anuroop Sriram, Aaron Defazio, Michal Drozdal, Krzysztof Geras, Mary Bruno, Marc Parente, Nafissa Yakubova, et al. "fastMRI:

- a publicly available raw k-space dataset for accelerated MRI reconstruction using machine learning". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2019, p. 657.
12. Zizhao Zhang, Adriana Romero, Matthew J Muckley, Pascal Vincent, and Michal Drozdal. "Active acquisition for MRI reconstruction". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2019, p. 1093.
  13. Matthew J. Muckley, Antonios Papaioannou, Benjamin Ades-Aron, Daniel K. Sodickson, Yvonne W. Lui, Els Fieremans, Dmitry S. Novikov, and Florian Knoll. "Improving Mean Kurtosis Measurements in Diffusion MRI via Learned Gibbs Removal". In: *ISMRM Machine Learning Workshop, Part 2*. 2018.
  14. Matthew J. Muckley, Jeffrey A. Fessler, and Marcelo V. W. Zibetti. "Accelerating Non-Cartesian, Sparsity-Promoting Image Reconstruction Via Line Search FISTA". in: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2018, p. 2809.
  15. Matthew J. Muckley, Li Feng, Hersh Chandarana, Daniel K. Sodickson, and Ricardo Otazo. "Respiratory motion-field reconstruction using low-rank plus sparse (L+S) approach for dynamic MRI of the lungs". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2017, p. 3864.
  16. Rebecca Ramb, Michael Zenge, Li Feng, Matthew J. Muckley, Christoph Forman, Leon Axel, Daniel K. Sodickson, and Ricardo Otazo. "Low-rank plus sparse tensor reconstruction for high-dimensional cardiac MRI". in: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2017, p. 1199.
  17. Matthew J. Muckley, Douglas C. Noll, and Jeffrey A. Fessler. "Fast, iterative subsampled spiral reconstruction via circulant majorizers". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2016, p. 521.
  18. Matthew J. Muckley, Douglas C. Noll, and Jeffrey A. Fessler. "Majorizer design for non-Cartesian MRI with sparsity-promoting regularization". In: *ISMRM Workshop on Data Sampling & Image Reconstruction*. 2016.
  19. Matthew J. Muckley, Douglas C. Noll, and Jeffrey A. Fessler. "Momentum optimization for iterative shrinkage algorithms in parallel MRI with sparsity-promoting regularization". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2015, p. 3413.
  20. Matthew J. Muckley, Douglas C. Noll, and Jeffrey A. Fessler. "Accelerating SENSE-type MR image reconstruction algorithms with incremental gradients". In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2014, p. 4400.
  21. Matthew J. Muckley, Scott J. Peltier, Douglas C. Noll, and Jeffrey A. Fessler. "Model-based reconstruction for physiological noise correction in functional MRI". in: *Proceedings of the International Society for Magnetic Resonance in Medicine*. 2013, p. 2623.
  22. Matthew J. Muckley, Scott J. Peltier, Jeffrey A. Fessler, and Douglas C. Noll. "Group sparsity reconstruction for physiological noise correction in functional MRI". in: *ISMRM Workshop on Data Sampling & Image Reconstruction*. 2013.

23. Matthew Muckley, Serife Agcaoglu, Ziwei Zhong, Hansi Zhao, Morgan Grisham, Darrin Karcher, Michael Orth, Michael Lilburn, and Ozan Akkus. "The Effect of Selective Breeding for Body Weight on Geometric Properties in Turkey Femurs". In: *Proceedings of the ASME Summer Bioengineering Conference*. 2011, pp. 901–902.
24. Ziwei Zhong, Serife Agcaoglu, Matthew Muckley, Hansi Zhao, Darrin Karcher, Michael Orth, Michael Lilburn, and Ozan Akkus. "Changes in Turkey Femora Mechanical Properties Resulting From Selective Breeding for Body Weight". In: *Proceedings of the ASME Summer Bioengineering Conference*. 2011, pp. 897–898.

### **Symposia, Seminars**

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2. Matthew J. Muckley, Scott J. Peltier, Jeffrey A. Fessler, and Douglas C. Noll. "Physiological noise removal using partially-separable models". In: *University of Michigan FMRI Symposium*. 2015.
3. Matthew J. Muckley, Douglas C. Noll, and Jeffrey A. Fessler. "BARISTA: A fast algorithm for MR image reconstruction with sparsity-promoting regularization". In: *University of Michigan Graduate Symposium*. 2014.
4. Matthew J. Muckley, Anna Gilbert, Jeffrey A. Fessler, and Douglas C. Noll. "Imaging fleeting thoughts". In: *University of Michigan M-Cubed Symposium*. 2014.
5. M. J. Muckley, A. C. Gilbert, J. A. Fessler, and D. C. Noll. "Imaging fleeting thoughts". In: *University of Michigan M-Cubed Symp*. 2013.
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