

Thomas Campbell Arnold, PhD

RESEARCH SCIENTIST · SUBTLE MEDICAL | MANAGING EDITOR · RADACCESS

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Professional Experience

- 2024-Pres. **Managing Editor**, RadAccess.com
- 2022-Pres. **Research Scientist**, Subtle Medical
- 2019-2022 **Graduate Researcher**, Center for Neuroengineering and therapeutics, University of Pennsylvania
- 2017-2019 **HHMI Interface Scholar**, Perelman School of Medicine, University of Pennsylvania
- 2016-2017 **Lab Manager**, CANlab, Department of Psychology and Neuroscience, Florida State University
- 2014-2016 **Research Assistant**, CANlab, Department of Psychology and Neuroscience, Florida State University

Education

University of Pennsylvania

Philadelphia, PA

BIOENGINEERING PHD

2017 - 2022

- Howard Hughes Medical Institute HHMI Interface Scholar
- Advisors: Dr. Brian Litt, Dr. Dani Bassett, Dr. Joel Stein, Dr. Kathryn Davis

Florida State University

Tallahassee, FL

MATHEMATICS BS, BIOLOGY BS

2011 - 2014

- Advisors: Dr. Wen Li, Dr. Dennis E. Slice

Publications

Summary: 14 Publications, 6 first-author, >500 citations, h-index = 10

- 2025.1 Alfredo Lucas, **T. Campbell Arnold**, Serhat V. Okar, Chetan Vadali, Karan D. Kawatra, Zheng Ren, Quy Cao, Russell T. Shinohara, Matthew K. Schindler, Kathryn A. Davis, Brian Litt, Daniel S. Reich, Joel M. Stein. Multi-contrast high-field quality image synthesis for portable low-field MRI using generative adversarial networks and paired data. *Radiology*. In Press.
- 2024.2 Alfredo Lucas, Chetan Vadali, Sofia Mouchtaris, **T. Campbell Arnold**, James J Gugger, Catherine Kulick-Soper, Mariam Josyula, Nina Petillo, Sandhitsu Das, Jacob Dubroff, John A Detre, Joel M Stein, Kathryn A Davis. Enhancing the Diagnostic Utility of ASL Imaging in Temporal Lobe Epilepsy through FlowGAN: An ASL to PET Image Translation Framework. *medRxiv*.
<https://doi.org/10.1101/2024.05.28.24308027>
- 2024.1 Rebecca Cooper, Rebecca A. Hayes, Mary Corcoran, Kevin N. Sheth, **T. Campbell Arnold**, Joel M. Stein, David C. Glahn, Maria Jalbrzikowski. Bridging the gap: improving correspondence between low-field and high-field magnetic resonance images in young people. *Frontiers in Neurology*. 15, 1339223
<https://doi.org/10.3389/fneur.2024.1339223>
- 2023.2 **T Campbell Arnold**, Lohith G Kini, John M Bernabei, Andrew Y Revell, Sandhitsu R Das, Joel M Stein, Tim H Lucas, Dario J Englot, Victoria L Morgan, Brian Litt, Kathryn A Davis. Remote effects of temporal lobe epilepsy surgery: long-term morphological changes after surgical resection. *Epilepsia: Open*. 8 (2), 559-570
<https://doi.org/10.1002/epi4.12733>
- 2023.1 **T Campbell Arnold**, Colbey W Freeman, Brian Litt, Stein, Joel M Stein. Low-field MRI: Clinical promise and challenges. *Journal of Magnetic Resonance Imaging*. 57 (1), 25-44 <https://doi.org/10.1002/jmri.28408>
- 2022.5 **T Campbell Arnold**, Ramya Muthukrishnan, Akash R Pattnaik, Nishant Sinha, Adam Gibson, Hannah Gonzalez, Sandhitsu R Das, Brian Litt, Dario J Englot, Victoria L Morgan, Kathryn A Davis, Joel M Stein. Deep Learning-Based Automated Segmentation of Resection Cavities on Postsurgical Epilepsy MRI. *NeuroImage: Clinical*. 36, 103154
<https://doi.org/10.1016/j.nicl.2022.103154>

2022.4 Andrew Y Revell, Alexander B Silva, **T Campbell Arnold**, Joel M Stein, Sandhitsu R Das, Russell T Shinohara, Dani S Bassett, Brian Litt, Kathryn A Davis. A framework for brain atlases: lessons from seizure dynamics. *NeuroImage*. 254, 118986 <https://doi.org/10.1016/j.neuroimage.2022.118986>

2022.3 **T Campbell Arnold**, Danni Tu, Serhat V Okar, Govind Nair, Samantha By, Karan D Kawatra, Timothy E Robert-Fitzgerald, Lisa M Desiderio, Matthew K Schindler, Russell T Shinohara, Daniel S Reich, Joel M Stein. Sensitivity of Portable Low-Field Magnetic Resonance Imaging for Multiple Sclerosis Lesions. *NeuroImage: Clinical*. 35, 103101 <https://doi.org/10.1016/j.nicl.2022.103101>

2022.2 **T Campbell Arnold**, Steven N Baldassano, Brian Litt, Joel M Stein. Simulated diagnostic performance of low-field MRI: Harnessing open-access datasets to evaluate novel devices. *Magnetic Resonance Imaging*. 87, 67-76 <https://doi.org/10.1016/j.mri.2021.12.007>

2022.1 Momodou L Sonko, **T Campbell Arnold**, Ivan A Kuznetsov. Machine Learning in Point of Care Ultrasound. *POCUS Journal*. 7 (Kidney), 78 <https://doi.org/10.24908/pocus.v7iKidney.15345>

2021.3 John M Bernabei, Nishant Sinha, **T Campbell Arnold**, Erin Conrad, Ian Ong, Akash R Pattnaik, Joel M Stein, Russell T Shinohara, Timothy H Lucas, Dani S Bassett, Kathryn A Davis, Brian Litt. Normative intracranial EEG maps epileptogenic tissues in focal epilepsy. *Brain*. (6), 1949-1961 <https://doi.org/10.1093/brain/awab480>

2021.2 Andrew Y Revell, Alexander B Silva, Dhanya Mahesh, Lena Armstrong, **T Campbell Arnold**, John M Bernabei, Joel M Stein, Sandhitsu R Das, Russell T Shinohara, Dani S Bassett, Brian Litt, Kathryn A Davis. White matter signals reflect information transmission between brain regions during seizures. *BioRxiv*. 2021.09. 15.460549 <https://doi.org/10.1101/2021.09.15.460549>

2021.1 John M Bernabei, **T Campbell Arnold**, Preya Shah, Andrew Revell, Ian Z Ong, Lohith Kini, Joel M Stein, Russell T Shinohara, Timothy H Lucas, Kathryn A Davis, Danielle S Bassett, Brian Litt. Electrocorticography and stereo EEG provide distinct measures of brain connectivity: implications for network models. *Brain Communications*. 3 (3), fcab156 <https://doi.org/10.1093/braincomms/fcab156>

2020.1 **T Campbell Arnold**, Yuqi You, Mingzhou Ding, Xi-Nian Zuo, Ivan de Araujo, Wen Li. Functional connectome analyses reveal the human olfactory network organization. *eNeuro*. 7 (4) <https://doi.org/10.1523/ENEURO.0551-19.2020>

Awards, Fellowships, & Grants

2025	Best Scientific Paper Award , American Society of Spine Radiology (ASSR)	
2024	Top 10 Most Cited Papers , Journal of Magnetic Resonance Imaging (JMRI)	
2024	Member in Training Award , American Society of Neuroradiology (ASNR)	\$ 2250
2024	Best Scientific Paper Award , Society for Imaging Informatics in Medicine (SIIM)	
2021	Young Congress Delegate Abstract Grant , European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS)	\$ 415
2020	Gaps in Practice Research Award , American Epilepsy Society (AES)	\$ 1,200
2018	Demo Day Travel Award , Sling Health	\$ 1,000
	Labs Ventures Pitch Competition: 2nd Place , Penn HealthX	\$ 1,250
2017-2019	Howard Hughes Medical Institute Interface Scholar , National Institute of Biomedical Imaging and Bioengineering	\$ 147,500
2012-2013	Undergraduate Research Fellowship , Florida State University	\$ 5,000
2012	InNOEvation Challenge Business Plan Competition , Jim Moran Institution for Global Entrepreneurship, Florida State University	\$ 150,000
2011-2014	Accepted Undergraduate Scholarships , Florida Bright Futures Scholarship, Seabee Memorial Scholarship, Admiral Ben Moreell Scholarship, Florida State University Freshmen Scholarship	\$ 56,000

Presentations

INVITED TALKS

- 2025.1 *AI Updates in Neuroradiology: Research, Validation, and Clinical Deployment*. Invited talk: American Society of Functional Neuroradiology, September 2025, Austin, TX.
- 2024.1 *Artificial Intelligence for Nuclear Medicine: Faster, Safer, and Smarter*. Invited talk: IEEE NPSS Ultra-Low-Dose PET Workshop, October 2024, Tampa, FL.
- 2023.1 *Portable Low Field MRI: Outpatient Neuroimaging Applications*. Invited talk: Jefferson Abington Radiology Department, February 2023, Abington, PA.
- 2022.1 *Portable Low Field MRI: Outpatient Neuroimaging Applications*. Invited talk: International Society for MR Radiographers Technologists, March 2022, London, UK.

CONTRIBUTED PRESENTATIONS (SINCE 2021)

Summary: 32 Total, 21 Oral presentations

- 2025.8 Image Synthesis of Double Inversion Recovery-like Series for Superior Contrast and Lesion Visibility. ASNR, May 2025, Philadelphia, PA. *Oral presentation*.
- 2025.7 Automated Reformat Algorithm Improves Brain Alignment To Enhance Radiologist Radiographer Workflow Efficiency. ASNR, May 2025, Philadelphia, PA. *Oral presentation*.
- 2025.6 Accelerating MRI Protocols Through Combined Image Enhancement and Image Synthesis. ASNR, May 2025, Philadelphia, PA. *Oral presentation*.
- 2025.5 Flexible Deep Learning MR Image Enhancement with Performance Monitoring. ECR, March 2025, Vienna, Austria. *Oral presentation*.
- 2025.4 Synthetic Multiplanar Reformation Generates Quantitatively Comparable Knee MR Images to Standard-Of-Care Acquisitions. ECR, March 2025, Vienna, Austria. *Oral presentation*.
- 2025.3 A Multi-Center Multi-Reader Clinical Performance Study of a Deep-Learning Based Brain MRI Contrast Boosting Algorithm. ECR, March 2025, Vienna, Austria. *Poster*.
- 2025.2 Dose Reduction in Sine MRI Using a Pertrained Simulation Network. ASSR, February 2025, San Diego, CA. *Oral presentation*.
- 2025.1 Combining Image Enhancement and Synthesis to Accelerate MRI Protocols. ASSR, February 2025, San Diego, CA. *Oral presentation*.
- 2024.13 A Deep Learning Framework for Generating Synthetic Low-Field Images with Paired High and Low-Field Data. RSNA, December 2024, Chicago, IL. *Oral presentation*.
- 2024.12 Quantifying Brain Volumes and Lesion Burden in Relation to Disease Duration and Severity in Multiple Sclerosis with Low-Field MRI. RSNA, December 2024, Chicago, IL. *Oral presentation*.
- 2024.11 A Novel Method for Synthesizing High-Resolution 3D FLAIR Brain MR Images Based on Clinical Low-Resolution 2D Images. RSNA, December 2024, Chicago, IL. *Oral presentation*.
- 2024.10 3D STIR Synthesis for Spine MRI by Combining 2D T1w 3D T2w Inputs. RSNA, December 2024, Chicago, IL. *Poster*.
- 2024.9 Automated Reformat Algorithm Improves Brain Alignment and Enhances Neuroradiologist Workflow Efficiency. RSNA, December 2024, Chicago, IL. *Poster*.
- 2024.8 Self-Supervised Pretraining Improves Transformer Model Performance on MRI Metadata Standardization Tasks. RSNA, December 2024, Chicago, IL. *Poster*.
- 2024.7 Harmonizing Multicenter Datasets: Enhancing Consistency and Longitudinal Alignment using NLP and Realignment Algorithms. ISMRM, May 2024, Singapore. *Poster*.
- 2024.6 Automated Brain Realignment Improves Lesion Overlap in Longitudinal MS Data. ASNR, May 2024, Las Vegas, NV. *Oral presentation*.
- 2024.5 Harmonization of Longitudinal Multicenter Imaging Data Through Natural Language Processing and Brain Alignment Algorithms. ASNR, May 2024, Las Vegas, NV. *Oral presentation*.

- 2024.4 AI Accelerated MRI Sequences Reduce Carbon Emissions. ECR, March 2024, Vienna, Austria. *Poster.*
- 2024.3 Deep-Learning Based Synthetic Multiplanar Reformation (MPR) Generates High- Quality Images that are Comparable to Standard-of-care Acquisitions. ECR, March 2024, Vienna, Austria. *Poster.*
- 2024.2 Deep-Learning-Based STIR Synthesis for Spine MRI with Variable T1 and T2 Slice Thickness. ASSR, February 2024, Las Vegas, NV. *Oral presentation.*
- 2024.1 Feasibility of a Deep Learning-generated MRI Sequence for Diagnosis. ASSR, February 2024, Las Vegas, NV. *Oral presentation.*
- 2023.3 Deep-Learning Based Contrast Boosting Improves Lesion Visualization and Image Quality: A Multi-Reader Study on Diagnostically Interchangeability with Standard Contrast Enhanced MRI of Brain Tumors. RSNA, November 2023, Chicago, IL. *Oral presentation.*
- 2023.2 Optimized Hanging Protocols and DICOM Metadata Harmonization Using Pixel-Based Deep-Learning Models. RSNA, November 2023, Chicago, IL. *Oral presentation.*
- 2023.1 DICOM-based Deep Learning Generated Synthetic STIR Spine Images Offer Better Quality than Conventional STIR MR Scans. ASSR, February 2023, Charleston, SC. *Oral presentation.*
- 2022.4 Sensitivity of low-field MRI for multiple sclerosis lesions and brain atrophy. RSNA, November 2022, Chicago, IL. *Oral presentation.*
- 2022.3 Generalizability of brain segmentation algorithms trained on high-field MRI to low-field data. SIIM-CMIMI, October 2022, Baltimore, MD. *Oral presentation.*
- 2022.2 Neurodegenerative biomarkers of MS on low-field MRI. ASFNR, August 2022, Maui, HI. *Oral presentation.*
- 2022.1 Portable Low-Field-Strength Magnetic Resonance Imaging Detects White Matter Lesions and Brain Atrophy in Multiple Sclerosis. ISMRM Low-field Workshop, March 2022, Bethesda, MD. *Video poster.*
- 2021.4 Monitoring Hydrocephalus Patients Using Portable, Low-Field MRI. RSNA, November 2021, Chicago, IL. *Poster.*
- 2021.3 In-vivo ferumoxytol imaging and T1/T2 characterization at 64mT. ISMRM, March 2021. *Video poster.*
- 2021.2 Reliability of brain volumetrics in Low-Field portable MRI. ISMRM, March 2021. *Video poster.*
- 2021.1 Portable, Low-Field Magnetic Resonance Imaging Detects Multiple Sclerosis Lesions and Brain Atrophy. Chan Zuckerberg Initiative Neurodegeneration Symposium, January 2021, Philadelphia, PA. *Oral presentation.*

Teaching Experience

- 2020 **Brain Computer Interfaces**, Teaching Assistant, School of Engineering and Applied Science, University of Pennsylvania
- 2018 **Medical Devices**, Teaching Assistant, Wharton School of Business, University of Pennsylvania
- 2013-2014 **Biology for Non-Majors**, Lab Instructor, Department of Biological Sciences, Florida State University
- 2012-2013 **Calculus I-III, Precalculus, College Algebra, and Macroeconomics**, STEM Academic Tutor, ACE Learning Studio, Florida State University

Mentoring

- 2025 **Satvik Tripathi**, Visual Language Model (VLM) Intern, Subtle Medical
- 2023-2024 **Lanhong Yao**, Data Management Intern, Subtle Medical
- 2019-2022 **Ramya Muthukrishnan**, PURM Student & Research Assistant, University of Pennsylvania
- 2022 **Serena Young**, Medical Student Summer Research, University of Pennsylvania
- 2022 **Chetan Vadali**, MindCore Student & Research Assistant, University of Pennsylvania
- 2022 **Dilini Ranaweera**, PURM Student, University of Pennsylvania
- 2022 **Rafael Sakamoto**, PURM Student, University of Pennsylvania
- 2021 **Hannah Gonzalez**, PURM Student, University of Pennsylvania
- 2022 **Joseph Dong**, PURM Student, University of Pennsylvania
- 2021 **Chelsea Pan**, PURM Student, University of Pennsylvania
- 2020 **Neha Krishnaswamy**, PURM Student, University of Pennsylvania
- 2020 **Eashan Sahai**, PURM Student, University of Pennsylvania
- 2020 **Kevin Mathew**, PURM Student, University of Pennsylvania
- 2019-2020 **Ellie Chen**, MindCore Student & Research Assistant, University of Pennsylvania

Outreach & Professional Development

SERVICE AND OUTREACH

- 2020-2022 **Mentorship Chair**, Graduate Association of Bioengineers, University of Pennsylvania
- 2018-2020 **President**, Graduate Association of Bioengineers, University of Pennsylvania
- 2018-2019 **Wellness Chair**, Graduate Association of Bioengineers, University of Pennsylvania
- 2017-2018 **Social Chair**, Graduate Association of Bioengineers, University of Pennsylvania
- 2017-2018 **Recruitment Chair**, Graduate Association of Bioengineers, University of Pennsylvania

PEER REVIEWER FOR JOURNALS

American Journal of Neuroradiology
 European Journal of Radiology
 NeuroImage
 Brain
 Imaging Neuroscience
 Human Brain Mapping
 Journal of Imaging Informatics in Medicine
 Artificial Intelligence In Medicine
 Multiple Sclerosis and Related Disorders
 Quantitative Imaging in Medicine and Surgery
 Frontiers in Neurology

PROFESSIONAL MEMBERSHIPS

Radiological Society of North America (RSNA)
 American Society for Neuroradiology (ASNR)
 American Society for Spine Radiology (ASSR)
 European Society of Radiologists (ESR)
 International Society for Magnetic Resonance Medicine (ISMRM)