Piyush Maiti
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Education

M.S., Biomedical Engineering — University of Southern California, Los Angeles — Dec 2018
B.E., Electrical & Electronics Engineering — Bhilai Institute of Technology, India — Aug 2014

Research Experience

Neuroimaging Data Analyst, Fein Memory and Aging Center — Apr 2023 – Present
University of California, San Francisco

Neuroimaging research analyst specializing in PET/MRI quantification and biomarker characterization to identify PET imaging signatures in Alzheimer's disease.

- Currently lead the PET Core for the Longitudinal Early-Onset Alzheimer's Disease Study (LEADS); manage, process, and analyze large-scale multi-site PET/MRI datasets, develop data-extraction tools, and perform statistical analyses aligned with study requirements.
- Contributing to the investigations of discordance between amyloid PET visual reads and quantitative metrics; conducting statistical and image-based analyses in LEADS and Alzheimer's Disease Neuroimaging Initiative (ADNI) with FDA-approved [^{18}F] tracers.
- Developing analytic workflows to identify participants receiving Aβ-targeting therapies and contributing to research on clinical and PET outcomes following treatements in LEADS.
- Developed automated quality control (QC) tools for MRI (SPM/FreeSurfer) and PET pipelines, deployed across projects.
- Processed and harmonized PET/MRI data across cohorts using FreeSurfer and SPM pipelines to quantify amyloid burden, supporting analyses of early- vs late-onset AD in LEADS and ADNI.
- Mentoring research assistants and supporting neurologists with participant-level PET/MRI interpretation reports.

Staff Scientist, Mallinckrodt Institute of Radiology — Jul 2021 – Mar 2023
Washington University School of Medicine

Imaging scientist specializing in quantitative PET methods and multimodal radiomics integration in preclinical imaging.

- Developed a 3D PET quantification framework that uses skeletonized signal extraction to reduce partial-volume effects and improve quantitative accuracy.
- Developed a PET/CT preprocessing pipeline for a longitudinal mouse model of obesity and Alzheimer's-related pathology, including kinetic modeling of [^{18}F]-FSPG to characterize metabolic imaging biomarkers.
- Worked on optimization and harmonization of PET scanner reconstructions for partial volume effects using Phantech's linear-filling phantom with [^{18}F]-FDG and [^{64}Cu] isotopes, comparing OSEM3D/MAP and TeraTomo 3D reconstructions across varying voxel sizes, iterations, and energy windows.
- Developed a cross-modality radiomics analysis tool to correlate features between histopathology (Nissl stain), autoradiography, and PET/MRI data in mouse brain and tumor imaging; implemented advanced image registration and computational methods to integrate radiomic features across modalities.
- Simulated compartmental-model-based time-activity curves to study sampling bias and optimize PET acquisition protocols.

Project Assistant, Imaging Genetics Center Jul 2019 – Jun 2021
USC Keck School of Medicine

Neuroimaging research assistant focused on deep learning–based MRI harmonization, preprocessing pipeline development, and automated quality-control tools for large multi-site Alzheimer's datasets.

- Co-developed a style-encoding deep learning framework to harmonize T1-weighted MRI scans; analyzed cross-scanner feature disparities and directed experimental validation.
- Optimized preprocessing pipelines for ADNI diffusion MRI, benchmarked image-processing tools, and conducted statistical analyses for validation.
- Developed tools to quantify Gibbs artifacts in MRI using the Physically Implausible Signal framework; generated simulated Gibbs distortions on QSM data for U-Net–based deep learning artifact removal.
- Built automated mask-correction tools for echo planar imaging distortion corrections in MRI and temporal/optic nerve exclusions using Sobel edge detection.
- Created interactive HTML-based platforms for quality control, data visualization, and quantification.

Research Assistant, Computational Imaging of Brain Organization Lab Oct 2018 – Jun 2019
Children's Hospital Los Angeles

Neonatal neuroimaging research assistant.

- Built automated diffusion MRI pipelines for neonatal brain imaging to assess white-matter injury; reduced manual QC effort by 30%.

Technical Skills

Programming: Python, MATLAB, C++, HTML | Scripting: Bash, Batch
Libraries/Tools: Nilearn, NumPy, OpenCV, Numba, Dask, MySQL
Imaging Tools: SPM, FSL, FreeSurfer, DIPY, MRtrix, PMOD, ITK-Snap, BrainSuite, VivoQuant

Publications & Abstracts

Papers and Publications

- Lagarde J., **Maiti P.**, Schonhaut D. R., Blazhenets G., Zhang J., Eloyan A., Thangarajah M., et al. *Amyloid PET in Sporadic Early-Versus Late-Onset Alzheimer's Disease: Comparison of the LEADS and ADNI Cohorts. Annals of Neurology*, 2025.
- Zhang J., Soleimani-Meigooni D. N., Koeppe R., Ackley S., Schonhaut D. R., Lin Z. E., **Maiti P.**, et al. *Exploring Centiloid Robustness: Impact of Sample Size and Image Resolution on Centiloid Conversion Accuracy. Journal of Nuclear Medicine*, 2025.
- Lin M., Chiotis K., **Maiti P.**, Zhang J., Blazhenets G., et al. *Tau Topography Subtypes Account for Clinical Heterogeneity and Longitudinal Trajectories in Early-Onset Alzheimer's Disease. Brain Communications*, under review.
- Guo Z., Luo J., Mashl R. J., Hoog J., **Maiti P.**, Fettig N., Davies S. R., et al. *Evaluation of Copanlisib in Combination with Eribulin in Triple-Negative Breast Cancer Patient-Derived Xenograft Models. Cancer Research Communications*, 4(6), 2024: 1430–1440.
- Liu M., **Maiti P.**, Thomopoulos S., Zhu A., Chai Y., Kim H., Jahanshad N. *Style Transfer Using Generative Adversarial Networks for Multi-Site MRI Harmonization. International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, pp. 313–322. Cham: Springer International Publishing, 2021.

- Thomopoulos S., Nir T. M., Villalon-Reina J. E., Zavaliangos-Petropulu A., **Maiti P.**, Zheng H., Nourollahimoghadam E., et al. *Diffusion MRI Metrics and Their Relation to Dementia Severity: Effects of Harmonization Approaches. International Symposium on Medical Information Processing and Analysis (ISPA)*, Brazil, 2021.
- Gadewar S., Zhu A. H., Thomopoulos S. I., Li Z., Ba Gari I., **Maiti P.**, Thompson P. M., Jahanshad N. *Region-Specific Automatic Quality Assurance for MRI-Derived Cortical Segmentations. IEEE International Symposium on Biomedical Imaging (ISBI)*, France, 2021.
- **Maiti P.** and Bhusnur S. *Application of Ultrasonic Sensors for the Development of Anti-Collision Device. International Journal of Electrical and Electronic Engineering & Telecommunications*, Vol. 5, No. 1, 2016, pp. 20–27.

Conference Abstracts

- Heston M. B., **Maiti P.**, Blazhenets G., Soleimani-Meigooni D. N., Lin Z., et al. *Discordance Between Amyloid PET Visual Read and Quantitation: False Positives or Early Pathology Detection? Human Amyloid Imaging (HAI)*, 2026 (Accepted).
- Rocha S., Pasternak S., Lesman-Segev O., Schwartz D., Blazhenets G., **Maiti P.**, et al. *Amyloid-PET and White Matter Hyperintensities but Not Military Service Duration nor Combat Exposure Are Associated with Neurodegeneration and Cognitive Impairment in Older Veterans. Human Amyloid Imaging (HAI)*, 2026 (Accepted).
- Ziontz J., **Maiti P.**, Zhang J., Chiotis K., Blazhenets G., Rocha S., Shankar R., et al. *Clinical and Cognitive Manifestations of Hemispheric Asymmetry in Neuroimaging Biomarkers in Early-Onset Alzheimer's Disease. Alzheimer's Association International Conference (AAIC),PA*, 2025.
- Chiotis K., Blazhenets G., Schonhaut D. R., Lagarde J., **Maiti P.**, Zhang J., Shankar R., et al. *Tau PET Load in Early- and Late-Onset Alzheimer's Disease: A Cross-Sectional and Longitudinal Comparison of the LEADS and ADNI Cohorts. Alzheimer's Association International Conference (AAIC)*, 2025.
- Njamnshi W. Y., Chiotis K., Tsoy E., Possin K. L., Hammers D. B., Eloyan A., Kirby K., **Maiti P.**, et al. *Tablet-Based Cognitive Assessment in a Multisite Study of Early-Onset Alzheimer's Disease: Association with Pen-and-Paper Tests and PET Measures of Amyloid and Tau. Alzheimer's Association International Conference (AAIC)*, 2025.
- Schonhaut D. R., Insel P. S., Soleimani-Meigooni D. N., Zeltzer E., Windon C., **Maiti P.**, Yballa C., et al. *A Clock Model of Regional Tau-PET Accumulation and Cognitive Decline in Sporadic Early-Onset Alzheimer's Disease. Alzheimer's & Dementia*, 20 (2024): e093935.
- **Maiti P.**, Li S., Dutta K., Whitehead T., Shoghi K. *Assessing the Performance of Software Platforms to Segment Mouse Brains Using a Digital Phantom.* SNMMI 2023, Chicago, IL.
- Shyam C., Whitehead T., Zhou D., Qiu L., **Maiti P.**, Tu Z., Kravitz A., Hershey T., Shoghi K. *Imaging Neuroinflammation in an Animal Model of Diet-Induced Obesity.* SNMMI 2023, Chicago, IL.
- Liu M., **Maiti P.**, Thomopoulos S., Kadakova N., Kim H., Jahanshad N. *Multi-Site MRI Harmonization Using Unified Generative Adversarial Networks.* OHBM 2021, Seoul, Korea.
- Ba Gari I., Gadewar S. P., Wei X., **Maiti P.**, Boyd J., Jahanshad N. *A 3D U-Net for Gibbs Artifact Removal from Quantitative Susceptibility Maps.* ISMRM 2021, Chicago, IL.
- Nir T. M., Salminen L., Villalon-Reina J. E., Tubi M. A., Thomopoulos S. I., **Maiti P.**, Braskie M. N., Thompson P. M., Jahanshad N. *Hippocampal Subfield Microstructure Abnormalities Mediate Associations Between Tau Burden and Memory Performance: Neuroimaging/Multi-Modal Comparisons. Alzheimer's & Dementia*, 16 (2020): e039622.

- Nir T. M., Villalon-Reina J. E., Thomopoulos S. I., **Maiti P.**, Reid R., Bernstein M., Jack C. R., Thompson P. M., Jahanshad N. *Improved Neurite Density Estimation in Alzheimer's Disease With Multi-Tissue Multicompartment Diffusion MRI Modeling.* IEEE EMBC 2020, Montreal, Canada.
- Nir T. M., Villalon-Reina J. E., Zhu A., Salminen L. E., Thomopoulos S. I., Tubi M. A., **Maiti P.**, Thompson P. M., Jahanshad N. *Hippocampal Microstructural Abnormalities in Cognitively Impaired and Amyloid-Positive Individuals.* OHBM 2020, Montreal, Canada.

Journal Review

Reviewer — IEEE International Symposium on Biomedical Imaging (ISBI)