

Saarang Panchavati

 saarangp |  saarangp |  saarangp.github.io |  saarang@ucla.edu

SUMMARY

PhD candidate in Medical Informatics at the University of California, Los Angeles, specializing in AI and neuroscience. Expertise in neural signal processing, and foundation model development using PyTorch.

Research focuses on building scalable models for EEG and invasive neural data to advance diagnosis, prediction, and brain-computer interfaces in neurological disorders. Strong record of integrating computational neuroscience and machine learning to uncover neural mechanisms and enhance scientific discovery, with publications and workshop papers in venues including ICLR, Epilepsia, and IEEE ICASSP.

EDUCATION

University of California, Los Angeles

Sep 2021 – May 2026 (*expected*)

Ph.D. in Medical Informatics

NSF GRFP Fellow

Training in Neurotechnology Translation Fellow

University of California, Berkeley

May 2021

B.S. in Bioengineering & Electrical Engineering & Computer Science

Sutardja Dai Entrepreneurship Fellowship

EXPERIENCE

Medical Informatics PhD Candidate

September 2021 – Present

Biomedical AI Research, Los Angeles

- Developing a foundation model for EEG using deep state-space models with over 50,000 hours of EEG data.
- Using a novel clinical dataset to better understand neural connectivity in pediatric epilepsy.
- Developing deep learning methods to explore neural correlates of gait in Parkinson's Disease.
- Building a BCI pipeline for deep learning-based motor imagery applications using PyTorch, BCI2000, and MNE.

Research Scientist Intern

Mar 2025 - August 2025

Meta FAIR, London

- Worked with the Brain AI team to develop foundation models for brain encoding and decoding
- Contributed to large codebases for analyzing brain data

Data Science Intern

March 2020 – May 2022

Dascena, Remote

- Evaluated deep learning models to predict C. Diff infection in the ICU, resulting in a journal publication.
- Built predictive models using longitudinal EMR data for multiple clinical indications, resulting in 3 journal publications
- Developed EHR data processing pipelines using AWS and PySQL to enable analysis at scale.

Technical Operations Intern

June 2019 – August 2019

Vertex Pharmaceuticals, Boston

- Developed a data acquisition and analysis pipeline for continuous drug production data.
- Built algorithms and a GUI for ETL and trend analysis on thousands of production reports.
- Increased analysis speed by 500x using Tabula, Pandas, PyQt, SQL, and SEEQ.

Undergraduate Researcher

January 2018 – May 2020

Maharbiz Lab, Berkeley

- Designed novel automations and experiments to evaluate neural implant biocompatibility in silico.
- Assembled automated accelerated aging experiments using Raspberry Pi, PySerial, and MATLAB, resulting in a conference publication.

Vice President of Projects

January 2018 – May 2021

Neurotech@Berkeley, Berkeley

- Developed a seamless EEG analysis and modeling platform for commercially available EEG devices.

- Created a data science-based curriculum to make neurotechnology accessible to the public.
- Built collaborations with neurotechnology research groups, leading to a student-led neurotech course at UC Berkeley.

PROJECTS

A Foundation Model for EEG

2024–Present

- Developing a novel large-scale hybrid foundation model for EEG that unifies temporal, spatial, and spectral representations of neural activity.
- Designed to generalize across datasets, channel configurations, and temporal resolutions.
- Builds upon prior work with transformer and state-space architectures to model long-range neural dependencies.

Uncovering the Role of the Thalamus in Epilepsy

2023–Present

- Investigating thalamocortical network dynamics in pediatric epilepsy through SEEG and functional connectivity analysis.
- Developing deep learning models to inform closed-loop stimulation strategies for seizure prevention.

Identifying the Neural Correlates of Gait

2024–Present

- Analyzing joint EEG and gait data to uncover neural mechanisms underlying locomotion.
- Investigating factors that determine patient response to non-invasive gait interventions.
- Developing contrastive learning methods to align noisy EEG and gait representations.

PUBLICATIONS

Conference Proceedings:

Panchavati, Saarang, Arnold, C. & Speier, W. *Mentality: A Mamba-based Approach towards Foundation Models for EEG The Twelfth International Conference on Learning Representations (ICLR)* (2024).

Panchavati, Saarang, Vander Dussen, S., Semwal, H., Ali, A., Chen, J., *et al.* *Pretrained transformers for seizure detection ICASSP 2023-2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)* (2023), 1–2.

Liu, P., **Panchavati, Saarang**, Pleasure, M., Siu, N., Bonnet, C., *et al.* *MobileNetV2 based diagnosis and grading of limbal stem cell deficiency 2022 IEEE 22nd international conference on bioinformatics and bioengineering (BIBE)* (2022), 174–179.

Shen, K., Yau, A., **Panchavati, Saarang** & Maharbiz, M. M. *An automated system for reactive accelerated aging of implant materials with in-situ testing 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)* (2020), 4466–4469.

Journals:

Chandravadia, N., Pendekanti, S., Roberts, D., Tran, R., **Panchavati, Saarang**, *et al.* Comparing P300 flashing paradigms in online typing with language models. *PloS one* **20**, e0303390 (2025).

Daida, A., Ding, Y., Zhang, Y., Oana, S., **Panchavati, Saarang**, *et al.* Fast ripple band high-frequency activity associated with thalamic sleep spindles in pediatric epilepsy. *Clinical Neurophysiology* (2025).

Daida, A., **Panchavati, Saarang**, Oana, S., Kanai, S., Zhang, Y., *et al.* Evidence of thalamocortical network activation during epileptic spasms: A thalamic stereotactic EEG study. *Epilepsia* (2025).

Panchavati, Saarang, Daida, A., Edmonds, B., Miyakoshi, M., Oana, S., *et al.* Uncovering spatiotemporal dynamics of the corticothalamic network at ictal onset. *Epilepsia* **65**, 1989–2003 (2024).

Parthasarathy, N., Soetedjo, J., **Panchavati, Saarang**, Parthasarathy, N., Arnold, C., *et al.* Evaluation Of P300 Speller Performance Using Large Language Models Along With Cross-Subject Training. *arXiv preprint arXiv:2410.15161* (2024).

Parthasarathy, N., Soetedjo, J., **Panchavati, Saarang**, Parthasarathy, N., Arnold, C., *et al.* High performance P300 spellers using GPT2 word prediction with cross-subject training. *Brain-Computer Interfaces* **11**, 210–224 (2024).

Siu, N., Liu, P., **Panchavati, Saarang**, Pleasure, M., Bonnet, C., *et al.* An Automated Deep Learning Approach for the Diagnosis of Limbal Stem Cell Deficiency. *Investigative Ophthalmology & Visual Science* **64**, 1096–1096 (2023).

Panchavati, Saarang, Zelin, N. S., Garikipati, A., Pellegrini, E., Iqbal, Z., *et al.* A comparative analysis of machine learning approaches to predict C. difficile infection in hospitalized patients. *American Journal of Infection Control* **50**, 250–257 (2022).

Panchavati, Saarang, Lam, C., Zelin, N. S., Pellegrini, E., Barnes, G., *et al.* Retrospective validation of a machine learning clinical decision support tool for myocardial infarction risk stratification. *Healthcare technology letters* **8**, 139–147 (2021).

Pellegrini, E., **Panchavati, Saarang**, Lam, C., Garikipati, A., Zelin, N., *et al.* A Machine Learning Clinical Decision Support Tool For Myocardial Infarction Diagnosis. *Journal of the American College of Cardiology* **77**, 653–653 (2021).

Kinstlinger, I. S., Saxton, S. H., Calderon, G. A., Ruiz, K. V., Yalacki, D. R., *et al.* Generation of model tissues with dendritic vascular networks via sacrificial laser-sintered carbohydrate templates. *Nature biomedical engineering* **4**, 916–932 (2020).

Mohamadlou, H., **Panchavati, Saarang**, Calvert, J., Lynn-Palevsky, A., Le, S., *et al.* Multicenter validation of a machine-learning algorithm for 48-h all-cause mortality prediction. *Health Informatics J.* **26**, 1912–1925 (2020).

SKILLS

Neuroscience	EEG/SEEG signal processing; connectivity analysis; neuroimaging; neuroanatomy
Machine Learning & Deep Learning	State-space models; transformers; Medical AI; NeuroAI; self-supervised learning; foundation models; time-series analysis; multimodal models
Programming	Python; Pandas; PyTorch; TensorFlow; Keras; MNE; scikit-learn; SQL; Java; Git; PyTorch Lightning