Moodasarige Shama, Deeksha

443-449-8201 | deekshamsham@gmail.com | linkedin.com/in/deeksha-shama | deeksha-ms.github.io

Summary: Experienced ML researcher with interests in time-series signal processing and trustworthy AL/ML for applications in digital health. Action-oriented, independent, and dedicated problem solver with strong theoretical background and top skills in Python and Matlab-based algorithm development.

Education

Johns Hopkins University **Aug. 2021 – May 2027**
Ph.D. in Electrical and Computer Engineering: Trustworthy ML for brain signals *Baltimore, MD*
Master of Science in Electrical Engineering — 3.94/4.00

National Institute of Technology Karnataka **Aug. 2017 – May 2021**
Bachelors in Electronics and Communication Engineering — 9.74/10.0 (rank 1/106) *Surathkal, India*

Relevant Skills

Languages/Frameworks: Python, C++, Pytorch, Jupyter, Matplotlib, Scikit-learn, Git, Latex, MATLAB
Courses: Statistical Signal Processing, Probabilistic ML, Deep Learning, Data Structures and Algorithms, Optimization
Soft Skills: Mentoring, presentation, leadership, collaboration, organization, planning, written and oral communication

Professional Experience

Microsoft Research **May 2025 – Aug 2025**
Intern - Brain Computer Interfaces under Dr. Dimitra Emmanouilidou and Dr. Ivan Tashev *Baltimore, MD*

- Developed a scalable foundation model pipeline for long-term cognitive load estimation from electro-physiological signals and other wearable data, achieving sub-second latency for real-time applications and 30% improvement in cross-subject performance over state-of-art ML models.
- Confirmed neuroscientific validity of predictions by tracking cognitive load-related neural markers using domain-aware, computationally-efficient partition SHAP, bridging model performance with biological interpretability.

Johns Hopkins University — Boston University **Aug 2021 – Present**
Graduate Research Assistant under Prof. Archana Venkataraman *Baltimore, MD*

- Designed an explainability module to interpret black-box seizure detectors using contrastive time series-text alignment and generative AI, producing human-readable outputs for clinical decision-making.
- Developed a novel Bayesian deep learning framework to address noisy annotations in EEG-based diagnostic model, achieving a 50% improvement in detection performance across large-scale multi-channel time-series datasets.
- Spearheaded a project in a multi-center collaboration to develop machine learning algorithms for autism diagnosis and enable biomarker discovery from multi-modal data, yielding interpretable, biologically sound results.

OneScope — EPFL **May 2020 – Dec 2020**
Data Research Analyst | Under Prof. Martin Jaggi and Prof. Mary-Anne Hartely *Lausanne, Switzerland*

- Developed a BERT-based Large Language Model (LLM) to predict respiratory ailments from audio signals showing high robustness to missing data compared to CNN baselines as outlined in my BTech Thesis
- Collaborated with start-up founders, data scientists and clinicians to standardize data analysis pipelines for medical devices with audio sensors to be deployed in low-income countries, leading to multiple publications in top journals.

Selected Publications

1. **Deeksha M. Shama**, D. Emmanouilidou, and I. Tashev. "*Cognitive Load Estimation Using Brain Foundation Models and Interpretability for BCIs.*" IEEE ICASSP, 2025. *Under Review.*
2. **Deeksha M. Shama** and A. Venkataraman. "*Uncertainty-Aware Bayesian Deep Learning with Noisy Training Labels for Seizure Detection.*" Int'l Workshop on Uncertainty for Safe Utilization of ML in Medical Imaging, 2024. Github | Paper
3. **Deeksha M. Shama**, J. Jing and A. Venkataraman. "*DeepSOZ: A Robust Deep Model for Joint Temporal and Spatial Seizure Onset Localization from Multichannel EEG Data.*" MICCAI, 2023. Github | Paper

Awards and Outreach

1. **NIH-MICCAI STAR award** (2023) aiding travel and registration to the conference.
2. **ECE Departmental Fellowship** (2021) at Johns Hopkins University, USA
3. **Best Outgoing Female Student in India** (2021) awarded by IEEE Women In Engineering and Hope Foundation.
4. **NITK Institute Gold Medal** (2021) for the highest cumulative GPA in the batch
6. **Teaching Assistance:**: Medical Image Analysis 2023, Foundations of Probabilistic Machine Learning 2025
5. **Mentoring**: RISE internship - Michelle Su (2024), Undergraduates - Amruth Niranjan (2024) and Jiasen Jing (2022)
6. **Volunteering**: Reviewer for GRAIL'24, MIDL'25, MICCAI'25, Public Outreach officer at Women in MICCAI'25, etc.