DEEKSHA M SHAMA

Electrical and Computer Engineering ⋄ Johns Hopkins University
https://deeksha-ms.github.io ⋄ dshama1@jhu.edu

EDUCATION

Johns Hopkins University *August 2021 - Present*
PhD in Electrical Engineering
Advisor: Dr. Archana Venkataraman

National Institute of Techology Karnataka *August 2017 - July 2021*
Bachelor of Technology
Department of Electronics and Communications Engineering

RESEARCH INTERESTS

My research interests lie in the intersection of Probabilistic Machine learning, Deep Learning, Signal Processing, and Medical Imaging. It involves high-dimesnional signal analysis with applications to diagnosis and biomarker identification for neurodegenerative diseases.
EEG · Interpretable ML · Trustworthy AI · Uncertainty-aware Learning

RESEARCH PUBLICATIONS

1. DeepSOZ: A Robust Deep Model for Joint Temporal and Spatial Seizure Onset Localization from Multichannel EEG Data.
Deeksha M. Shama, Jiasen Jing, Archana Venkataraman
International Conference on Medical Image Computing and Computer-Assisted Intervention (2023): 184-194 - Early Acceptance (top 14%)

2. DeepBreath—automated detection of respiratory pathology from lung auscultation in 572 pediatric outpatients across 5 countries
Julien Heitmann, Alban Glangetas, Jonathan Doenz, Juliane Dervaux, **Deeksha M. Shama**, ..., Mary-Anne Hartley
NPJ digital medicine 6, no. 1 (2023): 104

3. Deep learning diagnostic and risk-stratification pattern detection for COVID-19 in digital lung auscultations: clinical protocol for a case–control and prospective cohort study
Alban Glangetas, Mary-Anne Hartley, Aymeric Cantais, Delphine S Courvoisier, David Rivollet, **Deeksha M. Shama**, ..., Johan N Siebert
BMC pulmonary medicine (2021): 21(1), 1-8

HONORS AND AWARDS

1. NIH-MICCAI STAR award for student author registration in USA (2023) - 1/7 recipients in USA
2. ECE Departmental Fellowship at Johns Hopkins University, USA (2021)
3. Institute Gold medal for highest cumulative GPA in ECE NIT Surathkal, India (2021)
4. Best Graduating Female Student in IEEE India Council by IEEE Women In Engineering and Hope Foundation and Research Centre (2021)
5. Summer@EPFL research fellowship from the school of Computer and Communication Sciences, EPFL Switzerland (2020)
6. Certificate of Merit awarded by Institute of Engineers NITK for securing highest CGPA in ECE 2018

WORK EXPERIENCE

Boston Univesity Aug 2023 - Present
Visiting Researcher *Boston, MA*

· Guided by Dr. Archana Venkataraman
· Developing interpretable models for novel biomarkers for Autism Disorder in imaging-genetics data
· In collaboration with University of Virginia and Johns Hopkins University

EPFL - intelligent Global Health May 2020 - Dec 2020
Research Intern *Lausanne, Switzerland*

· Independently built a CNN-SVM model for COVID-19 diagnosis proving the superiority of lung sounds over clinical features. Exhaustive comparisons of window length, features (MFCC vs STFT), and data augmentation techniques
· Guided by Dr. Mary-Anne Hartley, Dr. Tatjana Chavdarova, Dr. Martin Jaggi
· Jointly supervised two groups of post-graduates to extend the application to other respiratory diseases

Pneumoscope-University Hospitals Geneva Aug 2020 - Dec 2020
Data Research Analyst *Lausanne, Switzerland*

· Developed a BERT-based model for missingness-resilient diagnostic pattern recognition using latent representations from a CRNN for respiratory ailments
· In collaboration with EPFL Switzerland

National Brain Research Centre Mar 2020 - Apr 2020
Undergraduate Research Intern *Gurgoan, India*

· Conducted systematic review of ML methods for Alzheimer's disease diagnosis and prognosis by perusing over 100 publications between 2000-2020 of Alzheimer's disease from multiple imaging modalitites such as MRI, PET, and MRS
· Guided by Dr. Pravat Mandal

Spectrum lab, Indian Institute of Science May 2019 - July 2020
Summer Research Intern *Bengaluru, India*

· Compared different high-resolution image reconstruction algorithms based on Fourier Ptychography such as iterative phase retrieval, gradient descent and accelerated Wirtinger flow optimization to stitch the low-resolution images from multiple illumination angles
· Guided by Dr. Chanda Shekhara Seelamantula

TALKS AND POSTERS

[2023] **DeepSOZ: A Robust Deep Model for Joint Temporal and Spatial Seizure Onset Localization from Multichannel EEG Data**

. MICCAI Main Conference - Vancouver Canada - Poster

. Clinical Translational Science Institute Symposium - Boston, MA USA - Poster

TEACHING AND MENTORING

- Teaching Assistant for Medical Image Analysis EN.520.623 and EN.520.423
- Research Mentor of Jiasen Jing - Undergraduate student in JHU Computer Science+Neuroscience

VOLUNTEER SERVICES

- Social Evening Chair of WiML @ ICML 2023 hosting 80+ international delegates
- Chairperson 2020-21 and Treasurer 2019-20 of IEEE NITK Student Branch
- Teaching Assistant 2017-20 at Centre For Advanced Learning, Mangalore
- Volunteer at the national level Women in Technology Summit at NITK 2018 hosting 100+ delegates

SKILLS

Areas	Deep Learning, Probabilistic ML, Transformers
Software & Tools	Python, MATLAB, C++, PyTorch, LaTeX