

# DEEKSHA M SHAMA

PhD student in Electrical Engineering ◊ Johns Hopkins University ◊ Boston, MA  
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## EDUCATION

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### Johns Hopkins University

PhD in Electrical Engineering

*Advisor: Dr. Archana Venkataraman*

*August 2021 - Present*

### Johns Hopkins University

Master of Science in Electrical Engineering — GPA: 3.94/4.00

*Advisor: Dr. Archana Venkataraman*

*August 2021 - May 2024*

### National Institute of Technology Karnataka

Bachelor of Technology — CGPA: 9.74/10 (**Rank 1/112**)

*Department of Electronics and Communications Engineering*

*August 2017 - July 2021*

## RESEARCH INTERESTS

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My research interests lie in the intersection of Probabilistic Machine learning, Deep Learning, Signal Processing, and Medical Imaging. It involves high-dimensional signal analysis aiming to improve human-in-loop diagnostic models and targeted treatment for neurological disorders. Particularly, I am focused quantifying data uncertainty in medical datasets to improve training and generalization of AI.  
**EEG • Interpretable ML • Trustworthy AI • Uncertainty-aware Learning**

## SKILLS

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### Areas

Bayesian Deep Learning, Probabilistic inference, Attention models

### Software & Tools

Python, MATLAB, C++, PyTorch, LaTeX

## RESEARCH PUBLICATIONS

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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

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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

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### **Boston Univesity**

*Visiting Researcher*

Aug 2023 - Present

*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**

*Research Intern*

May 2020 - Dec 2020

*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**

*Data Research Analyst*

Aug 2020 - Dec 2020

*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**

*Undergraduate Research Intern*

Mar 2020 - Apr 2020

*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 modalities such as MRI, PET, and MRS
- Guided by Dr. Pravat Mandal

### **Spectrum lab, Indian Institute of Science**

*Summer Research Intern*

May 2019 - July 2020

*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

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[2024 ] **A Novel Bayesian Framework for Temporal Seizure Detection from EEG given Noisy and Uncertain Training Labels**

- . 2nd International conference on Artificial Intelligence in Epilepsy and Neurological Disorders - Park city, UT USA - Platform presentation and poster

[2024 ] **Machine learning for Computational Neuroscience**

- . Invited speaker at Innovation Symposium at Boston University - Boston, MA USA

[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

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- **Research Mentor** of Michelle Wu under Boston University's RISE internship program
- **Research Mentor** of Amruth Niranjana - Undergraduate student in Boston University
- **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

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- Reviewer for Journal of Epilepsy and Behaviour 2024
- Social Evening Chair of WiML @ ICML 2022 hosting 100+ 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