Haarika Manda

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Education

University of California, Santa Barbara — Santa Barbara, California
PhD in Computer Science — Sept 2023–May 2027 (Est.)

- GPA: 4.0/4.0
- Research focus on Applications of ML and Foundation Models in assesing Internet Broadband access and quality.

Birla Institute of Technology and Science, Pilani
Bachelor of Engineering in Electronics and Communication Engineering — Aug 2019–May 2023

- Minor in Robotics

PUBLICATIONS

1. **H.Manda**,V.Srinivasavaradhan and Others ,"Assessing the Efficacy of the Connect America Fund in Addressing Internet Access Inequities in the US", Proceedings of the ACM SIGCOMM 2024 Conference
   Analyzed a self-collected novel dataset to audit the ISPs' self-reported coverage data, to study the broadband plans offered to addresses covered by CAF funding.

   Building block for "Amici Curiae Brief in Support of Respondents, Wisconsin Bell v U.S. ex rel. Heath (No.23-1127) (U.S. Oct. 1, 2024)".

2. **H.Manda**, S.Dash and R.K.Tripathy,"Time-Frequency Domain Modified Vision Transformer Model for Detection of Atrial Fibrillation Using Multi-Lead ECG Signals", National Conference on Communications (2023) (IEEE co-sponsored)
   Developed a modified Vision Transformer based architecture for detecting Heart Conditions. Involves use of signal processing techniques to convert time-series information to an image for classification.

Scholarships and Awards

- National Science Foundation (NSF) Graduate Research Fellowship (Awarded: April 4th, 2024) — 2024–Present

Teaching Experience

- Teaching Assistant for Advanced Topics in Internet Computing (Spring 2024)

Work Experience

University of California, Santa Barbara — Santa Barbara, California
Graduate Student Researcher (Co-adviced by Elizabeth Belding and Arpit Gupta) — Sept 2023-Present

- Designing foundation model for contextualizing speed test data using packet captures
- Co-developed a tool for web-scraping publicly available data using a scalable docker system with Selenium.
- Built data processing pipelines to extract/analyze meaningful information about internet equity. Used Python to automate user interactions of websites, by parsing HTML to gather public data. Work has been submitted to ACM's SIGCOMM Conference. Languages used: Python

Cisco Systems
Software Engineering Intern at Security Group (40 hours per week) — Aug 2022-Dec 2022

- Improved network intrusion detection capabilities of firewall by redesigning installation method of network policy configurations/security package.
- Improved firewall threat detection system by reducing deployment time and adding performance enhancements. Languages used: Java, Perl, Golang

Idaho National Laboratory Idaho Falls, Idaho
Machine Learning Intern (Post-Irradiation Examination Group) June 2024-Sept 2024

- Worked on materials characterization and 3D Visualization of irradiated materials using Machine Learning.
- Developed models that utilize architectures such as ResNet and U-Net on miscroscopy images to extract insights for research scientists.
- Draft publication currently in-progress

Dimaag-AI
Software Developer Intern of AI/ML team (40 hours per week) May 2022-July 2022

- Non-destructive fruit Quality Analysis using advanced imaging with statistical ML models and instance segmentation of fruits using Mask-RCNN.

Bhaskaracharya Institute for Space Applications and Geoinformatics
Software Intern (40 hours per week) May 2021-July 2021

- Used Java Frameworks for developing restful web services.
- Top to Bottom design of user friendly voting system using Spring Boot. Use of Java, HTML for front end along with encryption for secure login. Management of backend database using SQL.

Research Experience

Network Data Representation (Python, PyTorch) Member of Research Group
University of California, Santa Barbara Aug 2022–Jan 2023

- Group Research Project, Evaluation of existing network data/traffic representation methods used for ML based intrusion detection. Designed Python code to evaluate robustness, sparsity and other metrics of these representations, so that data can be fed to a foundation model.

Lung Sound Classification using Dual Vision Transformer Model Undergraduate Researcher
Birla Institute of Technology and Science, Pilani Jan 2023-Aug 2023

- Project involves processing the audio signals of human lungs (breathing sounds) and coding a Dual Vision Transformer model for predicting the pulmonary ailment. Model has an overall accuracy of 90%. Coded in Python and Tensorflow.

IoT based Electrocardiogram Machine (Matlab) Undergraduate Researcher
Birla Institute of Technology and Science, Pilani Aug 2021–Dec 2021

- Built a prototype ECG machine which uploads cardiac signals to the cloud. Wrote code in Matlab to process the signals received from patient. Designed basic server architecture for implementation.

Technical Skills

- **Programming:** Python3, Java, C/C++, Perl, HTML, Golang, React, JavaScript
- **Machine Learning:** Tensorflow, Keras, Pytorch
- **Big Data:** SQL
- **Tools/Frameworks:** LATEX, Git, Matlab, Spring Boot

SELECTED CLASSES TAKEN

- ML For Networked Systems, Trustworthy ML in Security, Special Topics in Large Language Models and Conversational AI, Advanced Topics in Security, Machine Learning, Runtime Systems

Organizations

- **Professional Chair, Woman in Science and Engineering(WiSE)** Oct 2024–Present
  Mentoring and organizing workshops to help graduate students navigate their professional careers. Organize and allocate funds for WiSE fellowship program
- **Technical Team, Phoenix Club for Electronics** Aug 2019–May 2023
  Arranged and organized workshops on IoT, robotics and electronics for college technical festivals. Pitched start-up idea to judge panel on a Medical App for compiling patient data across various hospitals.
- **Volunteer, Department of Publicity and Public Relations** Aug 2019–May 2020
  Marketing and organization for inviting students to college festivals on science, tech and engineering.
- **Active Member, Football Club** Aug 2019–May 2023
  Active member of college football team. Participated in college tournaments.