Akshita Ramya Kamsali

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Education

PhD in Electrical and Computer Engineering

Purdue University, IN, USA *Jan 2021 -*

GPA: *3.72/4.0*

Courses: Probabilistic Graphical Models, Deep Learning, Artificial Intelligence, Linear Algebra Applications, Quantum Detector and Sensors, Random Variables

B.Tech. in Electrical Engineering with Minor in Biomedical

Indian Institute of Technology(IIT) Hyderabad, India *Aug 2016 - May 2020*

Major GPA: *9.00/10* Minor GPA: *9.83/10*

Courses: Convex Optimization, Statistical Inference, Topics in Information Theory and Coding, Random Processes, Concentration Inequalities, Theoretical and Computational Neuroscience, Neuromechanics, Neurophysiological Signal Processing

Experience

Purdue University, IN, USA

Graduate Research Assistant, Dr. Joseph Makin, Department of ECE *June 2021 -*

- Working on identifying the optimal stimulus for a neural network.
- Implemented ASR models and perform analysis on hidden representations for auditory cortex modelling and optimal response detection in squirrel monkeys. Achieved 0.6 correlation between hidden representations and neural data.
- Implemented a Transformer based model for decoding neural activity to text, inspired from its recent advances in language translation task. Achieved an average Word Error Rate (WER) of ~0.1 across a held-out repeat set.

Purdue University, IN, USA

Graduate Research Assistant, Dr. Zubin Jacob, Department of ECE *Jan 2021 - July 2021*

- Designed and performed experiments to study absorption and reflection of radiation in IR region in W-YSZ stack for Thermal Barrier Coatings (TBC). Achieved 1000K temperature difference.
- Simulated various alloy transmission and reflection properties when paired with YSZ. Simulations showed 1500K temperature difference. Further, fabricated the stack in cleanroom using various techniques.

IIT Hyderabad, India

Undergraduate Researcher, Dr. Naresh Emani, Department of EE *Aug 2019 - Aug 2020*

- Analysed Carrier Dynamics in GaAs and TMDCs with Fluorescence Lifetime Imaging and Finite Element Analysis in COMSOL Multiphysics®.
- Used Single Photon Microscopy and Spectroscopy to calculate Fluoroscence Lifetime and matched simulations.
- Studied Temporal dispersion of a signal and further understand role of BIC - Initial simulation and verification using Python — further simulations in COMSOL Multiphysics® to study CPA.

Purdue University, IN, USA

Summer Research Intern, Dr. Mohit Verma, Department of ABE *May 2019 - July 2019*

- Developed a novel lysis method for DNA extraction and amplification for low-cost, user-friendly Bovine Respiratory Disease Diagnosis device.
- Developed technique could test with an accuracy over 80%(with soiled samples) and each test costing less than 5USD.

IIT Hyderabad, India

Undergrad Researcher, Dr. Mohan Raghavan, Department of BME *Aug 2018 - Apr 2019*

- Integrated large amount of motor systems data into a coherent model using NEURON and Python.
- Designed a Neuromorphic Movement Engine using NEUROiD (Neuro integration and Design, a platform developed by the Lab).

Wisig Networks, India

Summer Research Intern *May 2018 -July 2018*

- Developed a robust and optimized Down-link Channel for 5G communication modules at IIT Hyderabad.
- Integrated physical and MAC layers — worked closely with both the teams.

Publications

K. A. Ramya, T. Jinal, K. Saurabh and N. K. Emani, "Experimental Verification of Enhanced Photoluminescence in p-doped GaAs using Fluorescence Lifetime Measurements," WRAP, Guwahati, India, 2019, pp. 1-3
doi: 10.1109/WRAP47485.2019.9013731

Technical skills

Languages: `Python, C++, C, MATLAB, NEURON,` LaTeX

ML/Data Science: `PyTorch, Tensorflow, NumPy, OpenCV, SciPy, SKLearn, Pandas`

Tools: `COMSOL Multiphysics®, Cadence, TCAD, LTspice, LabVIEW`

Academic Achievements

- **Academic Excellence Award** for the highest CGPA in the Department for the Academic year 2017-2018 and graduated 2^{nd} in class
- **Purdue Undergraduate Research Experience (PURE 2019)** One of the two students selected from IITH. This program was funded by Purdue University to perform research over summer at WL campus.
- **Tokyo Innovation Summer Program 2018, University of Tokyo**: One of the two students from IIT Hyderabad selected. This program was *fully funded* by **Government of Japan** through **JASSO**
- **JEE Mains** - AIR 39 (Architecture) AIR 719 (Engineering) among 1,000,000 students, **JEE Advanced** - AIR 2674 among 150,000 students in the year 2016

Academic Responsibilities

Purdue University

ECE20007: Electrical Engineeering Fundamentals Lab I — **Dr. Ryan Beasley**

Graduate Teaching Assistant — *Spring 2021*

- Instructor for two sections with a total of 60 students and Supervisor for the final project
- Led a team of 4 Undergraduate TAs for timely evaluations and feedback to the students

IIT Hyderabad

Statistics — **Dr. Sameen Naqvi**

Teaching Assistant — *Spring 2019, 2020*

- Conduct tutorial sessions, make assignment questions and grade Final Exams

Vector Calculus — **Dr. D. Sukumar, Dr. Neeraj Kumar**

Teaching Assistant — *Spring 2018, 2020*

- Lead Undergraduate TA
- Conduct tutorial sessions, make assignment questions and grade Final Exams

Electrical Independent Project — **Dr. Naresh Emani**

Teaching Assistant — *Spring 2020*

- In-charge of Fourier Optics experiment demonstration and evaluation of ideas inspired from the same.

Probability — **Dr. CS Sastry, Dr. Amit T**

Teaching Assistant — *Fall 2018, 2019*

- Conduct tutorial sessions, make assignment questions and grade Final Exams

Introduction to VLSI Design — **Dr. Naresh Emani**

Teaching Assistant — *Fall 2019*

- Mentor two teams for the final project[4-bit ALU design in LTSpice and Cadence]
- Conduct tutorial sessions, make assignment questions and grade Final Exams

Data Structures — **Dr. Maunendra Desarkar**

Teaching Assistant — *Spring 2019*

- Help modify the structure for more hands-on based approach
- Conduct tutorial sessions, make assignment questions and grade Final Exams

Digital Signal Processing — **Dr. GVV Sharma**

Teaching Assistant — *Spring 2018*

- Help modify the structure for more hands-on based approach with Python assignments and DSP boards
- Conduct tutorial sessions, make assignment questions and grade Final Exams