

Vikrant Jaltare

Graduate Student

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Summary

I am a Ph.D. candidate at UC San Diego interested in developing biologically inspired architectures and efficient learning algorithms for deep neural networks. My goal is to create a mathematical framework for efficient learning and inference in deep neural networks and apply it to biomedical research. I am also interested in developing research essays to gauge student perceptions of STEM education and creating equitable and engaging curricula.

Education

University of California San Diego

La Jolla, California

Doctor of Philosophy in Bioengineering

Sept 2021 - Current

- Research focus on training efficient deep neural networks and developing biologically-inspired architectures for efficient computing and AI for biomedical science.

College of Engineering Pune

Pune, India

Bachelor of Technology in Electrical Engineering

August 2016 - October 2020

- Graduated with distinction. Stood third in the class.
- Minor in Computer Science.

Skills

Programming Python, MATLAB, Julia, C++, C, HTML/CSS/JS

Tools PyTorch, JAX, TensorFlow, MS Office, bash, \LaTeX

Theory Deep Learning Theory, Probabilistic Graph Networks, Computational Neuroscience, Reinforcement Learning

Teaching roles at UCSD Bioinstrumentation Design (BENG 186B), Human Physiology (BENG 140A)

Social Mentoring, music performance, public speaking

Publications

- Garcia, K., Hock, M., **Jaltare, V.**, Uysalel, C., McCabe, K.J., Teitgen, A. and Valdez-Jasso, D., 2022. Investigating the Multiscale Impact of Deoxyadenosine Triphosphate (dATP) on Pulmonary Arterial Hypertension (PAH) Induced Heart Failure. In Computational Physiology: Simula Summer School 2021– Student Reports (pp. 77-90). Cham: Springer International Publishing.
- **Jaltare, V.** and Moghe, K., 2020, April. Effect of expressive writing on math anxiety of engineering students. In IOP Conference Series: Materials Science and Engineering (Vol. 804, No. 1, p. 012057). IOP Publishing.
- Safa, A., **Jaltare, V.**, Sebt, S., Gano, K., Leugering, J., Gielen, G. and Cauwenberghs, G., 2024, April. Towards Chip-in-the-loop Spiking Neural Network Training via Metropolis-Hastings Sampling. In 2024 Neuro Inspired Computational Elements Conference (NICE) (pp. 1-5). IEEE.

Ongoing Research

- Developing learning rules for stochastic-thresholding neurons for efficient-inference deep neural networks.
- Modeling hardware-aware deep learning simulator for in-memory computing circuits with novel architectures and end-to-end training using JAX.
- Developing a training algorithm for Spiking Neural Networks that can leverage graded noise to learn continuum between rate and spike-time codes. Poster presented at ICNCE 2024 in Aachen, Germany.

Experience

University of California San Diego

La Jolla, California

Graduate Student

2021 - Present

Indian Institute of Science Education and Research Pune

Pune, India

Research Assistant

May 2019 - July 2021

Outreach

Chair, Mentorship Committee

UC San Diego

Bioengineering Graduate Society

Sept 2021 – Present

- Organize academic and career-oriented workshops for graduate and undergraduate students.