Neha Simha

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Education

University of California, Berkeley Berkeley, CA
B.A. in Molecular and Cell Biology with Honors May 2022

Cumulative GPA: 3.7

Upper Division Coursework: **MCB C100A** Biophysical chemistry, **PH 142** Probability and statistics in public health, **PH 150B** Human health and the environment, **MCB 110** Molecular biology, **PH 150A** Epidemiology and human disease, **MCB 104** Genetics, genomics, and cell biology, **PH 150D** Health policy management, **MCB 100B** Pathways, mechanisms and regulations, **MCB 150** Molecular immunology

Research: I had the opportunity to work with Professor Kristin Scott and Postdoctoral Scholar Philip Shiu on understanding the neural circuits of feeding in fruit flies using behavioral assays, computational modeling, and brain dissections. I completed my senior honors thesis: **Interactions between taste modalities in D. melanogaster**.

Experience

Stanford University, Interstitial Lung Disease Program Stanford, CA
Research Coordinator September 2022 - October 2024

We achieved strong zero-shot ILD classification results using CLIP-extracted "patch montages" and DAPT, without the need for labeled training data. We also applied Imbio's Lung Texture Analysis to baseline CT scans, finding that it served as a significant predictor for clinical progression. I was supervised by Dr. Rishi Raj, Interstitial Lung Disease Program, and collaborated with Dr. Curt Langlotz, Center for Artificial Intelligence in Medicine and Imaging.

Scott Lab Berkeley, CA
Research Apprentice February 2019 - May 2022

We created a leaky integrate-and-fire computational model of the Drosophila brain to study circuit properties of feeding behaviors. I performed optogenetic behavior experiments, brain dissections, and traced through the full adult fly brain. I attempted to understand and visualize the interactions between taste modalities including sensing sugar and water stimuli.

Inspirit AI Palo Alto, CA
Instructor June 2024 - Present

I taught high school students in the Scholars program about basic artificial intelligence and machine learning, and in the Deep Dives program, focused on applying AI/ML to medicine. I also supervised individual research projects, guiding students in dataset selection, hyperparameter tuning, and scientific writing.

San Francisco Free Clinic San Francisco, CA
Medical Assistant October 2024 - Present

I manually measured blood pressure, recorded height and weight, and conducted intake interviews for vulnerable patient populations in a medical setting. I also ensured smooth clinic operations by running on-site laboratory tests, packaging off-site laboratory tests, coordinating patient care messaging, and maintaining a clean and organized environment.

Publications

Shiu, P.K., Sterne, G.R., Spiller, N., **Simha, N.**, et al. A Drosophila computational brain model reveals sensorimotor processing. Nature 634, 210–219 (2024). https://doi.org/10.1038/s41586-024-07763-9.

Van Uden, C., Bluethgen, C., Attias, M., Polacin, M., Guo, H.H., **Simha, N.**, et al. Exploring the versatility of zero-shot CLIP for interstitial lung disease classification. arXiv preprint arXiv:2306.01111 (2023).

Conferences

- “Lung Texture Analysis Predicts Clinical Progression in a Cohort of Patients With Dermatomyositis and Scleroderma-related Interstitial Lung Disease,” American Thoracic Society, San Diego, CA, May, 2024.
- “Mortality and Intubation Risk Factors in Patients With Interstitial Lung Disease Infected With COVID-19 in the United States in 2020” American Thoracic Society, San Diego, CA, May, 2024.

Honors

MCB Honors Program January 2022 - May 2022
Opportunity to recognize MCB students who commit to research, strong academics, and writing a senior thesis.

References

Dr. Rishi Raj, rishi.raj@stanford.edu
Clinical Professor, Pulmonary, Allergy & Critical Care Medicine, Stanford University

Dr. Manoj Maddali, mmaddali@stanford.edu
Clinical Scholar, Pulmonary, Allergy & Critical Care Medicine, Stanford University

Dr. Kristin Scott, kscott@berkeley.edu
Professor Emeritus of Genetics, Genomics, Evolution, and Development, UC Berkeley

Dr. Philip Shiu, philshiu@gmail.com
Senior Scientist, Eon Systems