Srihari Ganesh

Education

Harvard University May 2024
Master of Arts (AM) in Statistics *GPA: 3.959*

- Graduate Coursework: Machine Learning (MIT), Reinforcement Learning, Statistical Inference, Bayesian Data Analysis, Probability.

Bachelor of Arts (AB) in Chemical & Physical Biology and Mathematics *GPA: 4.0*

- Awards: Phi Beta Kappa Junior 24 (top 24/1700 in class), John Harvard Scholar (top 5% of class), Detur Book Prize.

Research Experience

MIT Computer Science & Artificial Intelligence Laboratory Advisor: Prof. Regina Barzilay (EECS)
Undergraduate Computational Biology Researcher *February 2023 – present*

- Developing denoising diffusion probabilistic models (DDPMs) in PyTorch for symmetric protein complex generation.
- Modified AlphaFold structure module architecture with Invariant Point Cross Attention to process symmetric protein complexes more efficiently.
- 2023 Herchel Smith Undergraduate Science Research Program fellow. Presented at Harvard Undergraduate Research Opportunities in Science (HUROS) fair and Harvard National Collegiate Research Conference (NCRC).

Harvard Medical School Advisor: Prof. Debora Marks (Systems Biology)
Undergraduate Computational Biology Researcher *March 2022 – January 2023*

- Used Potts mixture models to cluster a multiple sequence alignment (MSA) and perform direct coupling analysis.
- Implemented expectation-maximization (EM) using Python and the PLMC evolutionary couplings pipeline.
- Found that EM algorithm was not better than baseline on biological system across hyperparameter sweep.
- Received 2022 Summer Harvard College Research Program (HCRP) funding. Submitted written summary of findings.

Harvard University Molecular & Cellular Biology Advisor: Prof. Philippe Cluzel (MCB, Applied Physics)
Undergraduate Systems Biology Researcher *December 2020 – August 2021*

- Experimentally showed that *E. coli* strains of varied protein burden can coexist in long-term stationary phase (LTSP).
- Computationally implemented a differential equations simulation in Python for LTSP evolutionary dynamics.
- Hypothesized that oscillating protein burden allows strains of high and low average burdens to coexist.
- Received 2021 Program for Research in Science and Engineering (PRISE) funding. Presented findings to advisor weekly and to peers at summer symposium.

Teaching Experience

Statistics/Computer Science Teaching Fellow September 2021 – present

- Taught Stat 110 (Probability), Stat 111 (Statistical Inference), and CS 181 (Machine Learning).
- Plan and teach weekly review section and office hours. Grade problem sets and exams.
- Statistics 110: Rated 4.94/5 by 32 students, received Derek Bok Center Certificate of Distinction in Teaching.
- Computer Science 181: Rated 5/5 by 11 students.

Organic Chemistry Course Assistant January 2022 – December 2022

- Taught Chem 20 (Organic Chemistry I) and Chem 30 (Organic Chemistry II).
- Hosted weekly office hours. Guided students during lecture breakout sessions.

Leadership

Co-President *Group for Undergraduates in Statistics at Harvard (GUSH)* May 2022 – April 2023

- Led board of 15 undergraduates in promoting community in the Harvard Statistics department.
- Contacted panelists, publicized event, and secured funding for women's panel with 30 attendees.
- Organized annual mentorship program between students and processed reimbursements.
- Recruited panelists/attendees and coordinated pre-semester Zoom courses panels and R workshops with over 40 attendees.