Rohan Subramanian

rs9768@nyu.edu | rohans14.github.io | Google Scholar | Linkedin

Research interests

My research sits at the intersection of machine learning and biology, where I seek to develop robust and interpretable methods for understanding complex biological systems using representation learning and generative modeling. I am interested in applications to single-cell and perturbation biology, particularly immune cell behavior in health, cancer, and inflammatory diseases.

Education

New York University, Courant Institute — *New York, NY*
Ph.D., Computer Science — 2025 – present (expected 2030)

- Advised by Romain Lopez
- Supported by the NSF Graduate Research Fellowship
- Focus: AI for science, probabilistic machine learning, deep generative models

Harvey Mudd College — *Claremont, CA*
B.S. in Computer Science, emphasis in Data Science (GPA: 3.89/4.00) — May 2025

Publications

- E. Berman*, **R. Subramanian***, S. Jha, L. Jagarapu, R. Lopez, R. Ranganath (2026). *Solver to System: LLM Reasoning Across Representations and Execution in Scientific Simulation.* Sim2Science Workshop at NeurIPS, 2026. [OpenReview]
- B. T. Chi*, S. Fulcar*, J. Ipe*, O. Schleifer*, **R. Subramanian***, C. Vlases*, N. Matasci, K. Georgouli, L. Pottier, T. Hsu, T. S. Carpenter, D. V. Nissley, F. C. Lightstone, F. H. Streitz, H. I. Ingólfsson, F. Aydin (2025). *Integrating Ultra-Coarse-Grained Protein Models into Accessible Workflows for Multiscale Molecular Dynamics.* ACS Omega. [DOI]
- **R. Subramanian** and D. Sahoo (2022). *Boolean implication analysis of single-cell data predicts retinal cell type markers*, BMC Bioinformatics, 23(1). [DOI]

(indicates equal contribution)*

Experience

Lawrence Livermore National Laboratory — *Livermore, CA*
Research Software Engineer, Harvey Mudd College Clinic Program — August 2024 – May 2025

- Advisors: Naim Matasci, Fikret Aydin, Helgi Ingólfsson
- Led a team of 6 to design accessible software infrastructure for running multiscale molecular dynamics simulations of RAS-RAF protein activation on HPC systems, proof-of-concept diffusion model for coarse to fine-grained structure backmapping.

Memorial Sloan Kettering Cancer Center — *New York, NY*
Research Intern, Computational Oncology — June – August 2024

- Advisor: Wesley Tansey
- Designed an autoregressive Hidden Markov Model with learned embeddings to model tumor growth over time, enabling prediction of time-course drug responses in PDX studies.

Harvey Mudd College — *Claremont, CA*
Machine Learning Researcher, Department of Computer Science — January 2024 – May 2025

- Advisor: Gabriel Hope
- Investigated semi-supervised learning using variational autoencoders for image classification with sparse labels.
- Benchmarked prediction, consistency, and inpainting constraints to better enforce an interpretable latent space.

University of California, San Diego — *La Jolla, CA*
Research Intern, Department of Pediatrics & Computer Science — June 2022 – October 2023

- Advisor: Debashis Sahoo
- Designed algorithm to learn Boolean networks of gene regulation from single-cell data, outperforming existing correlation-based approaches and predicting novel retinal cell type markers.

Awards and Honors

National Science Foundation Graduate Research Fellowship 2025
NYU MacCracken Fellowship 2025
Leeds Student Travel Award | Stipend supporting conference travel from Harvey Mudd College. 2024
Indian Linguistics Olympiad | Top 30 students in the nation. 2020

Posters and Presentations

- **Subramanian, R.**, Nigam, S., and Sahoo, D. Boolean Networks Reveal Opposing Roles of SLC22A5 and SLC22A15 in Inflammatory Bowel Disease. *CSHL Biological Data Science* (November 2024).
- **Subramanian, R.** and Tansey, W. Probabilistic Time Series Modeling of Tumor Growth in Patient-Derived Xenografts. *Harvey Mudd College Summer Research Symposium* (September 2024).

Teaching

New York University, Center for Data Science *New York, NY*
Teaching Assistant, Probability and Statistics for Data Science Fall 2026

Harvey Mudd College *Claremont, CA*
Teaching Assistant 2022 – 2025

- Department of Computer Science: Introduction to Computer Science, Algorithms, Neural Networks
- Department of Biology: Introduction to Biology, Molecular Genetics

Leadership and Service

Associated Students of Harvey Mudd College *Claremont, CA*
Senior Class President August 2024 – May 2025
Division of Student Affairs, Harvey Mudd College *Claremont, CA*
Residential Life Mentor to first-year students August 2023 – May 2024

Skills

Programming Languages	Python, R, Java, C++, SQL
Machine Learning/Data Science	PyTorch, scikit-learn, NumPy, Pandas, SciPy, Pyro
Bioinformatics	scanpy, anndata, scvi-tools, Seurat, DESeq2
Software/Tools	Git, Docker, Jupyter Notebook, Shell, SLURM
Languages	English, Tamil, Kannada (fluent); Hindi, French (intermediate)

References

Available upon request.