

# Rohan Subramanian

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## EDUCATION

### Harvey Mudd College

Bachelor of Science in Computer Science (Emphasis in Data Science)

Claremont, CA

Expected May 2025

- GPA: 3.879, Major GPA: 3.917
- **Relevant Coursework:**
- *CS/Math*: Multivariable Calculus, Linear Algebra, Data Structures and Program Development, Discrete Mathematics, Differential Equations, Engineering Systems, Logic and Computability, Intermediate Probability, Algorithms, Machine Learning, Neural Networks, Computer Systems, Computing Practices, Projects and People
- *Biology*: Experimental biology Laboratory, Molecular Genetics, Molecular Immunology, Biostatistics, Mathematical and Computational Biology

## PUBLICATIONS

- **Subramanian, R.** and Sahoo, D. (2022) Boolean implication analysis of single-cell data predicts retinal cell type markers, BMC Bioinformatics, 23(1). [doi:10.1186/s12859-022-04915-4](https://doi.org/10.1186/s12859-022-04915-4).
- Falah, K., Zhang, P., **Subramanian, R.**, Ermakov, V., Joseph, B., MacMullen, C., Parmar, A., Ferguson, C., Granados, J., Davis, R., Jamshidi, N., Sahoo, D., Nigam, SK. (2024) The OCTN-related transporter SLC22A15 regulates carnitine, antioxidants and inflammatory cytokines in vivo with implications for inflammatory bowel disease, *submitted to Journal of Clinical Investigation*.

## RESEARCH EXPERIENCE

### Lawrence Livermore National Laboratory

Clinic Project Team Member, Harvey Mudd College Clinic Program

Livermore, CA

August 2024 - present

- Advisor: Naim Matasci, Liaisons: Fikret Aydin, Helgi Ingólfsson
- Leading a team of 6 to design accessible software infrastructure for running multiscale molecular dynamics simulations of RAS-RAF protein activation on HPC systems.

### Memorial Sloan Kettering Cancer Center

Research Intern, Computational Oncology

New York, NY

June 2024 - present

- Advisor: Wesley Tansey
- Accepted into NCI-funded Computational Biology Summer Program (CBSP).
- Contributed to a Pytorch and Pyro codebase for time series analysis using probabilistic graphical models.
- Designed an autoregressive HMM with learned embeddings to model tumor growth and predict drug responses in PDX studies.

### Harvey Mudd College

Student Researcher, Department of Computer Science

Claremont, CA

January 2024 - present

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

### University of California, San Diego

Research Intern, Department of Pediatrics & Computer Science

La Jolla, CA

June 2022 - October 2023

- Advisor: Debashis Sahoo
- Created computational pipeline for neutrophil cell count estimation from blood mRNA data
- Designed algorithm to learn Boolean networks of gene regulation from single-cell data.
  - \* Outperformed correlation-based methods and predicted novel retinal cell type markers.
  - \* Paper published in BMC Bioinformatics.
- Mentored 3 high school students and created comprehensive software training resources and documentation.

### Harvey Mudd College

Student Researcher, Department of Biology

Claremont, CA

January 2022 - May 2024

- Advisor: Danae Schulz
- Developed bioinformatics pipelines to investigate gene regulation of *Plasmodium* life cycle using RNA-seq and CHIP-seq data.
- Designed, collected and analyzed data from PCR, gel electrophoresis, flow cytometry, Western blot and TA cloning.

## AWARDS AND HONORS

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<b>Leeds Student Travel Award</b>   \$1000 stipend supporting conference travel from Harvey Mudd College.	2024
<b>Dean's List</b>   Harvey Mudd College award to students with high GPA.	2024
<b>HackTech Finalist</b>   Top 10 finalist presenting at CalTech hackathon.	2024
<b>LAHacks Track Winner</b>   First place winner in education category at UCLA hackathon.	2023
<b>National Institutes of Health</b>   Received grant award supporting summer research (\$13951).	2023
<b>Chairman's Scholarship</b>   Awarded to outstanding TISB graduating seniors (\$6000).	2021
<b>IBDP Honors</b>   Perfect score (45/45) in International Baccalaureate.	2021
<b>Indian Linguistics Olympiad</b>   Top 30 students in the nation, invited to international training camp.	2020

## POSTERS AND PRESENTATIONS

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- **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, Leeds Travel Award).
- **Subramanian, R.** and Tansey, W. Probabilistic Time Series Modeling of Tumor Growth in Patient-Derived Xenografts. *Harvey Mudd College Summer Research Symposium* (September 2024).
- **Subramanian, R.** and Tansey, W. Probabilistic Time Series Modeling of Tumor Growth in Patient-Derived Xenografts. *CBSP Final Symposium* (August 2024).

## TALKS

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<b>CBSP Journal Club</b>   Overview of alignment and pseudoalignment algorithms for RNA sequencing.	June 2024
<b>Tansey Lab Meeting</b>   Introduction to variational inference and VAEs in single-cell genomics.	August 2024

## TEACHING

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<b>Harvey Mudd College</b> Biology Academic Excellence Facilitator	<i>Claremont, CA</i> August 2023 - present
<ul style="list-style-type: none"><li>• Courses: Introduction to Biology, Molecular Genetics</li><li>• Selected by faculty to hold weekly tutoring for 10-50 students.</li><li>• Host weekly facilitator sessions to improve tutoring across the college.</li></ul>	
<b>Harvey Mudd College</b> Teaching Assistant	<i>Claremont, CA</i> August 2022 - present
<ul style="list-style-type: none"><li>• Courses: Introduction to Computer Science, Data Structures, Algorithms, Neural Networks</li><li>• Hold weekly tutoring sessions for groups of 5-30 students and graded homework assignments.</li></ul>	

## LEADERSHIP AND SERVICE

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<b>Associated Students of Harvey Mudd College</b> Senior Class President	<i>Claremont, CA</i> August 2024 - May 2025
<ul style="list-style-type: none"><li>• Elected by student body to represent senior class in student government.</li><li>• Leading search committee for commencement speaker and senior class trip.</li></ul>	
<b>Division of Student Affairs, Harvey Mudd College</b> Residential Life Mentor	<i>Claremont, CA</i> August 2023 - May 2024
<ul style="list-style-type: none"><li>• Mentored a group of 6 freshmen, organized residential life events to enhance dorm culture and community engagement.</li><li>• Certified in mental health first aid and bystander training to ensure a supportive and safe environment on campus.</li><li>• Student leader and Division of Student Affairs staff member, instrumental in planning new student orientation.</li></ul>	

## SKILLS

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<b>Programming Languages</b>	Python, R, Java, C++, JavaScript, SQL
<b>Machine Learning/Data Science</b>	PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas, SciPy, Pyro
<b>Software/Web Development Languages</b>	Git, Docker, Visual Studio Code, Eclipse, HTML, CSS English, Tamil, Kannada, Hindi, French