

CONTACT INFORMATION	linkedin.com/in/aarthi-venkat/ aarthivenkat.github.io	(408) 799-9189 aarthi.venkat@yale.edu
EDUCATION	<b>Yale University</b> <b>Ph.D.</b> in Computational Biology & Bioinformatics <b>M.S.</b> in Computational Biology & Bioinformatics  <b>The University of California, San Diego</b> <b>B.S.</b> in Bioengineering: Bioinformatics	May 2024 Dec 2021  Jun 2019
RESEARCH EXPERIENCE	<b>Eric and Wendy Schmidt Center Postdoctoral Fellow</b> Broad Institute of MIT & Harvard, Drs. Marinka Zitnik & Nir Hacohen <ul style="list-style-type: none"><li>Addressing questions in systems immunology and cancer immunotherapy with graph and geometric deep learning in collaboration with Roche Pharmaceuticals</li></ul> <b>Computational Biology &amp; Bioinformatics Ph.D. Student</b> Yale University, Dr. Smita Krishnaswamy <ul style="list-style-type: none"><li>Developed framework for learning representations leveraging geometric structure</li><li>Analyzed cellular and molecular behavior in diverse contexts with co-led collaborations</li></ul> <b>Applied Science Research Intern</b> Google Brain, Drs. Lucy Colwell & Farhad Hormozdiari <ul style="list-style-type: none"><li>Performed ML-guided biological sequence design with Google Genomics, UCSF</li><li>Achieved top performance for CRISPR RNA guide efficacy and expression prediction</li></ul> <b>Bioinformatics Research Assistant</b> La Jolla Institute for Immunology, Dr. Ferhat Ay <ul style="list-style-type: none"><li>Characterized 3D structure of malaria-related parasite genomes from Hi-C sequencing</li><li>Corrected <i>Toxoplasma gondii</i> misassembly with Hi-C and long-read sequencing</li></ul> <b>Computational Biology Research Assistant</b> Institute for Genomic Medicine, Dr. Theresa Gaasterland <ul style="list-style-type: none"><li>Performed bioinformatic analysis of primary congenital glaucoma exomes</li></ul> <b>Genome Informatics Intern</b> Regeneron Pharmaceuticals, Regeneron Genetics Center <ul style="list-style-type: none"><li>Integrated loss-of-function variant and target annotation for over 500,000 exomes</li><li>One of 7 selected out of 250+ interns to present at company-wide annual event</li></ul> <b>Data Analytics Intern</b> Auris Health, Research & Development <ul style="list-style-type: none"><li>Built cloud-based pipeline to facilitate high-performance analysis of endoscopic robot</li></ul>	Sept 2024-Present  Aug 2019-Jul 2024  Sept 2021-Dec 2021  Oct 2016-Sept 2019  Sept 2018 - Aug 2019  Jun 2018 - Sept 2018  Jun 2017 - Sept 2017

PUBLICATIONS \* Denotes equal contribution.  
Links to full publications available on my website: <https://aarthivenkat.github.io>

[1] **A Venkat\***, S Youtlen\*, BP San Juan\* ...S Krishnaswamy, CL Chaffer. *AAnet resolves a continuum of spatially-localized cell states to unveil tumor complexity*. In Review Cancer Discovery.

[2] **A Venkat**, S Leone, S Youtlen, E Fagerberg, J Attanasio, NS Joshi, S Krishnaswamy. *Mapping the gene space at single-cell resolution with gene signal pattern analysis*. In Revision Nature Comp. Sci.

[3] **A Venkat\***, J Chew\*, F Cardoso Rodriguez, CJ Tape, M Perlmutter, S Krishnaswamy. *Directed scattering for knowledge graph-based cellular signaling analysis*. ICASSP 2024.

- [4] **A Venkat\***, M Carlino\*, B Lawton\* ... S Krishnaswamy, D Krause. *Single-cell analysis reveals transcriptional dynamics in primary parathyroid tissue*. Genome Research 2024.
- [5] **A Venkat**, D Bhaskar, S Krishnaswamy. *Multiscale geometric and topological analyses for characterizing and predicting immune responses from single-cell data*. Cell Trends in Immunology 2023.
- [6] D Bhaskar, S Magruder, E De Brouwer, A Venkat, F Wenkel, G Wolf, S Krishnaswamy. *Inferring dynamic regulatory interaction graphs from time series data with perturbations*. LoG Conference 2023.
- [7] S Leone, A Tong, G Huguet, **A Venkat**, G Wolf, S Krishnaswamy. *Graph Fourier MMD for Signals on Graphs*. SampTA 2023.
- [8] A Tong\*, M Kuchroo\*, S Gupta, **A Venkat** ... CL Chaffer, S Krishnaswamy. *Revealing dynamic temporal regulatory networks driving cancer cell state plasticity with neural ODE-based optimal transport*.
- [9] M Damo, N Hornick, A Venkat ... NS Joshi. *PD-1 prevents pathogenicity of effector CD8 T cells that infiltrate skin under homeostatic conditions*. Nature 2023.
- [10] M Amodio, SE Youlten, **A Venkat** CL Chaffer, S Krishnaswamy. *Single-cell multi-modal GAN reveals spatial patterns in single-cell data from triple-negative breast cancer*. Cell Patterns 2022.
- [11] KA Connolly, M Kuchroo, **A Venkat** ... NS Joshi. *A reservoir of stem-like CD8+ T cells in the tumor draining lymph node preserves the ongoing antitumor immune response*. Science Immunology 2021.
- [12] Y Su\*, **A Venkat\***, Y Yadav, L Puglisi, S Fodeh. *Twitter-based analysis reveals differential COVID-19 concerns across areas with socioeconomic disparities*. CBM 2021.
- [13] J Xia, **A Venkat**, ML Reese, KG Le Roch, F Ay, JP Boyle. *Third generation sequencing revises the molecular karyotype for Toxoplasma gondii and identifies emerging copy number variants in sexual recombinants*. Genome Research 2021.
- [14] EM Bunnik, **A Venkat\***, J Shao\*, KE McGovern ... F Ay, KG Le Roch. *Comparative 3D Organization in Apicomplexan Parasites*. PNAS 2019.

#### PRESENTATIONS

- *Mapping the gene space at single-cell resolution with gene signal pattern analysis*. Yale Department of Genetics Symposium Poster Presentation 2023.
- *Mapping the gene space at single-cell resolution with gene signal pattern analysis*. Gruber Science Fellowship Symposium Poster Presentation 2023.
- *Learning directed and hyperbolic embeddings*. Graph Signal Processing Workshop Oral Presentation 2023.
- *PHATE reveals cell state transformation in Tercen biomedical data analysis platform*. CYTO Oral Presentation 2023.
- *Mapping the gene space at single-cell resolution with gene signal pattern analysis*. AAI Immunology Poster Presentation 2023.
- *Elucidating mechanisms of endocrine-exocrine signaling in pancreatic cancer*. Yale Single Cell Symposium Oral Presentation 2022.
- *Manifold-based gene density estimates reveal immune signaling in meningioma*. ISMB Conference Poster Presentation 2021.
- *Archetypal analysis of antigen-specific T cell responses across conditions*. CSHL Systems Immunology Conference Poster Presentation 2021.
- *Leveraging the Power of Human Genetics through Knockout Discovery*. Regeneron Oral Presentation & Poster 2018.

TEACHING EXPERIENCE	<b>Teaching Assistant, Computational Genomics</b> Cold Springs Harbor Laboratory Workshop	Nov 2022, Dec 2023
	<ul style="list-style-type: none"> <li>Designed and presented single-cell workshops for 20-40 graduate level researchers</li> </ul>	
	<b>Teaching Fellow, Deep Learning Theory and Applications</b> Yale University, Computer Science	S 2021, S 2024
	<ul style="list-style-type: none"> <li>Held recitations, designed and graded homework, exams, and projects for undergraduate and graduate students</li> </ul>	
	<b>Teaching Assistant, Machine Learning for Single-cell Analysis</b> Yale University, Department of Genetics & Yale SEAS	May 2020, Jan 2021
	<ul style="list-style-type: none"> <li>Co-taught 100+ researchers across all levels in tools for single-cell analysis</li> </ul>	
	<b>Teaching Assistant, Introduction to Biomedical Data Science and Health Informatics</b> Yale Center for Medical Informatics	Jun 2020
	<ul style="list-style-type: none"> <li>Supported teaching of biomedical data analysis to researchers across all levels</li> </ul>	
	<b>Genetics Undergraduate Tutor / Instructional Assistant</b> UC San Diego Biological Sciences	F 2017, F 2018, S 2019
	<ul style="list-style-type: none"> <li>Developed material for weekly recitation sessions, office hours, and exam preparation</li> <li>Received Excellence in Teaching Award for top performance (100% positive reviews)</li> </ul>	
FELLOWSHIPS AND GRANTS	<b>GSA Conference Travel Fellowship</b> Yale University	Jun 2023, Mar 2024
	<b>Yale Gruber Science Fellowship</b> Yale University	Aug 2019
	<ul style="list-style-type: none"> <li>Most prestigious award offered by Graduate School of Arts and Sciences to incoming science PhDs in recognition of outstanding accomplishments and promise.</li> </ul>	
HONORS AND AWARDS	<b>Public Communication Certificate</b> Poorvu Center for Teaching & Learning, Yale University	2023
	<ul style="list-style-type: none"> <li>Certificate for skills developed in oral and written communication</li> </ul>	
	<b>OHER Award Finalist for Yale Research Excellence</b> Yale School of Medicine, Office of Health Equity Research	2022
	<ul style="list-style-type: none"> <li>Received for "Twitter-based analysis reveals differential COVID-19 concerns across areas with socioeconomic disparities"</li> </ul>	
	<b>Outstanding Academic Achievement in Bioengineering</b> The University of California, San Diego	2019
	<ul style="list-style-type: none"> <li>Highest performance in graduating class in Bioengineering: Bioinformatics</li> </ul>	
	<b>Excellence in Teaching Award</b> The University of California, San Diego	2019
	<ul style="list-style-type: none"> <li>Highest performance evaluation for teaching assistance in Genetics</li> </ul>	
	<b>Tau Beta Pi Engineering Honors</b> The University of California, San Diego	2018, 2019
	<ul style="list-style-type: none"> <li>Awarded to engineering students displaying high academic achievement and personal, professional integrity</li> </ul>	
	<b>Muir College Caledonian Honors</b> The University of California, San Diego	2018, 2019
	<ul style="list-style-type: none"> <li>Awarded to engineering students displaying high academic achievement and personal, professional integrity</li> </ul>	
	<b>Provost Honors</b> The University of California, San Diego	2015 - 2019
	<ul style="list-style-type: none"> <li>Received 12 times for high academic achievement</li> </ul>	

ACADEMIC  
SERVICE

- Invited Reviewer** for RECOMB 2024 2023
- Invited Reviewer** for Yale Journal of Biology and Medicine 2023
- Student Advisory Board**, Poorvu Center for Teaching & Learning 2023
- Develop curriculum and policy incorporating AI literacy and DEI principles
- Networking Chair**, Yale Gruber Science Fellowship 2022, 2023
- Host networking talks, panels, and discussion to foster Gruber scientific community
- Representative**, Graduate Student Assembly 2023
- Advocate for CB&B graduate students and improve Yale healthcare literacy and policy
- Reviewing Editor**, Yale Journal of Biology & Medicine, 2023
- Manage manuscripts for quarterly publication, including inviting reviewers and making editorial decisions
- Social Services & Insurance Counseling**, HAVEN Free 2022, 2023
- Provided healthcare guidance and resources to uninsured New Haven residents
- Cancer Biology Training Program Trainee & Shadowee** 2021 - 2023
- Completed certificate in cancer biology through additional translational coursework
  - Shadowed GI oncologist Dr. Pamela Kunz and discussed translational focus of my research and related work