

CONTACT INFORMATION	linkedin.com/in/aarthi-venkat/ aarthivenkat.github.io	(408) 799-9189 avenkat@broadinstitute.org
EDUCATION	Yale University Ph.D. in Computational Biology & Bioinformatics M.S. in Computational Biology & Bioinformatics The University of California, San Diego B.S. in Bioengineering: Bioinformatics	May 2024 Dec 2021 Jun 2019
RESEARCH EXPERIENCE	Eric and Wendy Schmidt Center Postdoctoral Fellow Broad Institute of MIT & Harvard, Drs. Marinka Zitnik & Nir Hacohen <ul style="list-style-type: none">Bridging systems immunology with modern geometric deep learning toward transferring insights across biological scales and contexts Computational Biology & Bioinformatics Ph.D. Student Yale University, Dr. Smita Krishnaswamy <ul style="list-style-type: none">Developed geometric representation learning methods to characterize cellular and molecular behavior in diverse, co-led collaborations Applied Science Research Intern Google Brain, Drs. Lucy Colwell & Farhad Hormozdiari <ul style="list-style-type: none">Performed ML-guided biological sequence design with Google Genomics, UCSFAchieved top performance for CRISPR RNA guide efficacy and expression prediction Bioinformatics Research Assistant La Jolla Institute for Immunology, Dr. Ferhat Ay <ul style="list-style-type: none">Characterized 3D structure of malaria-related parasite genomes from Hi-C sequencingCorrected <i>Toxoplasma gondii</i> misassembly with Hi-C and long-read sequencing Computational Biology Research Assistant Institute for Genomic Medicine, Dr. Theresa Gaasterland <ul style="list-style-type: none">Performed bioinformatic analysis of primary congenital glaucoma exomes Genome Informatics Intern Regeneron Pharmaceuticals, Regeneron Genetics Center <ul style="list-style-type: none">Integrated loss-of-function variant and target annotation for over 500,000 exomesOne of 7 selected out of 250+ interns to present at company-wide annual event Data Analytics Intern Auris Health, Research & Development <ul style="list-style-type: none">Built cloud-based pipeline to facilitate high-performance analysis of endoscopic robot	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	*§ Denote equal contribution. Links to full publications available on my website: https://aarthivenkat.github.io [1] C Garcia*, A Venkat* , DC McQuaid* ... S Krishnaswamy [§] , MD Muzumdar [§] . <i>Beta cells are essential drivers of pancreatic ductal adenocarcinoma development</i> . In Revision at Nature Communications. [2] A Venkat* , S Youlten*, BP San Juan* ... S Krishnaswamy [§] , CL Chaffer [§] . <i>AAnet resolves a continuum of spatially-localized cell states to unveil tumor complexity</i> . Cancer Discovery (2025). [3] A Venkat* , S Leone, S Youlten, E Fagerberg, J Attanasio, NS Joshi, S Krishnaswamy. <i>Mapping the gene space at single-cell resolution with gene signal pattern analysis</i> . Nature Computational Science (2024).	

- [4] **A Venkat***, J Chew*, F Cardoso Rodriguez, CJ Tape, M Perlmutter[§], S Krishnaswamy[§]. *Directed scattering for knowledge graph-based cellular signaling analysis*. ICASSP (2024).
- [5] **A Venkat***, M Carlino*, B Lawton* ... S Krishnaswamy[§], D Krause[§]. *Single-cell analysis reveals transcriptional dynamics in primary parathyroid tissue*. Genome Research (2024).
- [6] **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).
- [7] D Bhaskar*, DS Magruder*, M Morales, E De Brouwer, **A Venkat**, F Wenkel, J Noonan, G Wolf, N Ivanova, S Krishnaswamy. *Inferring dynamic regulatory interaction graphs from time series data with perturbations*. LoG Conference (2023).
- [8] S Leone, A Tong, G Huguet, **A Venkat**, G Wolf, S Krishnaswamy. *Graph Fourier MMD for Signals on Graphs*. SampTA (2023).
- [9] X Sun*, S Gupta*, A Tong*, M Kuchroo*, D Bhaskar*, C Liu, **A Venkat** ... CL Chaffer[§], S Krishnaswamy[§]. *Revealing dynamic temporal trajectories and underlying regulatory networks with Cflows*. In Review.
- [10] 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).
- [11] M Amodio, SE Youtlen, **A Venkat**, BP San Juan, CL Chaffer, S Krishnaswamy. *Single-cell multi-modal GAN reveals spatial patterns in single-cell data from triple-negative breast cancer*. Cell Patterns (2022).
- [12] 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).
- [13] 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).
- [14] 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).
- [15] 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*
LOG Poster Presentation (2025)
- *Epistemic Responsibility and Interdisciplinarity in the Age of AI for Science*
LLMs and Digital Autonomy: From Misinformation to Context Collapse Oral Presentation (2025)
- *Dissecting cellular and molecular mechanisms of pancreatic cancer with deep learning*
ISMB MLCSB Conference Oral Presentation (2025)
- *Dissecting cellular and molecular mechanisms of pancreatic cancer*
Dr. Samuel M. Nabrit Conference, Brown University, Oral Presentation (2025)
- *Geometric representation learning for single-cell biology across contexts*
Invited talk, Brown University (2025)
- *Learning cellular and molecular mechanisms of pancreatic cancer*
Connecting the Dots Broad Institute Symposium Poster Presentation (2024)
- *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 MLCSB 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	Teaching Assistant, Computational Genomics	Nov 2022, Dec 2023
	Cold Springs Harbor Laboratory Workshop	
	<ul style="list-style-type: none"> • Designed and presented single-cell workshops for 20-40 PhD-level researchers 	
	Teaching Fellow, Deep Learning Theory and Applications	S 2021, S 2024
	Yale University, Computer Science	
	<ul style="list-style-type: none"> • Held recitations, designed and graded homework, exams, and projects for undergraduate and graduate students 	
	Teaching Assistant, Machine Learning for Single-cell Analysis	May 2020, Jan 2021
	Yale University, Department of Genetics & Yale SEAS	
	<ul style="list-style-type: none"> • Co-taught 100+ researchers across all levels in tools for single-cell analysis 	
	Teaching Assistant, Introduction to Biomedical Data Science and Health Informatics	Jun 2020
	Yale Center for Medical Informatics	
	<ul style="list-style-type: none"> • Assisted in Python for biomedical data analysis for researchers across all levels 	
	Genetics Undergraduate Tutor / Instructional Assistant	F 2017, F 2018, S 2019
	UC San Diego Biological Sciences	
	<ul style="list-style-type: none"> • Developed material for weekly recitation sessions, office hours, and exam preparation • Received Excellence in Teaching Award for top performance (100% positive reviews) 	
FELLOWSHIPS AND GRANTS	GSA Conference Travel Fellowship	Jun 2023, Mar 2024
	Yale University	
	Yale Gruber Science Fellowship	Aug 2019
	Yale University	
	<ul style="list-style-type: none"> • Most prestigious award offered by Graduate School of Arts and Sciences to incoming science PhDs in recognition of outstanding accomplishments and promise 	
HONORS AND AWARDS	Public Communication Certificate	2023
	Poorvu Center for Teaching & Learning, Yale University	
	<ul style="list-style-type: none"> • Certificate for skills developed in oral and written communication 	
	OHER Award Finalist for Yale Research Excellence	2022
	Yale School of Medicine, Office of Health Equity Research	
	<ul style="list-style-type: none"> • Received for “Twitter-based analysis reveals differential COVID-19 concerns across areas with socioeconomic disparities” 	
	Outstanding Academic Achievement in Bioengineering	2019
	The University of California, San Diego	
	<ul style="list-style-type: none"> • Highest performance in graduating class in Bioengineering: Bioinformatics 	
	Excellence in Teaching Award	2019
	The University of California, San Diego	
	<ul style="list-style-type: none"> • Highest performance evaluation for teaching assistance in Genetics 	

ACADEMIC SERVICE	Tau Beta Pi Engineering Honors	2018, 2019
	The University of California, San Diego	
	<ul style="list-style-type: none"> • Awarded to engineering students displaying high academic achievement and personal, professional integrity 	
	Muir College Caledonian Honors	2018, 2019
	The University of California, San Diego	
	<ul style="list-style-type: none"> • Awarded to engineering students displaying high academic achievement and personal, professional integrity 	
	Provost Honors	2015-2019
	The University of California, San Diego	
	<ul style="list-style-type: none"> • Received 12 times for high academic achievement 	
	Research Mentor for high school student researcher	2025
	Invited Reviewer Computational & Structural Biotechnology Journal	2025
	Broad Summer Research Program Selection Committee	2025
	Program Committee Member for ISMB/ECCB 2025	2025
	Foundation Models in Genomics Panel Moderator @ Broad	2024
	Invited Reviewer RECOMB 2024	2024
	Invited Reviewer Yale Journal of Biology and Medicine	2023
	Student Advisory Board , Poorvu Center for Teaching & Learning	2023
	<ul style="list-style-type: none"> • Developed curriculum and policy incorporating AI literacy and DEI principles 	
	Networking Chair , Yale Gruber Science Fellowship	2022, 2023
	<ul style="list-style-type: none"> • Hosted networking talks, panels, and discussion to foster Gruber scientific community 	
	Student Representative , Graduate Student Assembly	2023
	<ul style="list-style-type: none"> • Advocated for CB&B graduate students to improve Yale healthcare literacy and policy 	
	Reviewing Editor , Yale Journal of Biology & Medicine	2023
	<ul style="list-style-type: none"> • Managed manuscripts for <i>Big Data</i> issue, including inviting reviewers and making editorial decisions 	
	Social Services & Insurance Counseling , HAVEN Free Clinic	2022, 2023
	<ul style="list-style-type: none"> • Provided healthcare guidance and resources to uninsured New Haven residents 	
	Cancer Biology Training Program , Yale School of Medicine	2021-2023
	<ul style="list-style-type: none"> • Completed certificate in cancer biology through additional translational coursework • Shadowed Dr. Pamela Kunz and discussed clinical relevance of <i>in silico</i> cancer research 	