Gino Prasad

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Cancer Genomics | Machine Learning | Bioinformatics | Computer Vision | Data Science

Education

PhD, Computer Science (Bioinformatics): UC San Diego
Summer 2023 - Spring 2027

Academic Advisor: Vineet Bafna, Professor of Computer Science, Bioinformatics and Systems Biology *GPA 4.0/4.0*

- **Focus:** Applied Machine Learning for Spatial Transcriptomics
- **Relevant Courses:** Deep Learning, Bioinformatics Algorithms, Population Genomics, Generative AI modeling, Recommender Systems

Bachelor of Science, Bioinformatics: UC San Diego
Fall 2020 - Spring 2023

Major: Bioinformatics (B.S.), Minor: Computer Science *GPA 3.97/4.0*

- **Relevant Courses:** Machine Learning, Molecular Sequence Analysis, Probability & Statistics, Linear Algebra, Data Structures, Algorithms

Experience

Machine Learning & Bioinformatics Researcher
Jun 2022 - Current

UC San Diego Bafna Lab

- Developed **Computer Vision** Models for FISH (Fluorescence in Situ Hybridization) Spatial Transcriptomics Data.
- Predicts **tumor amplification status** (ecDNA/HSR) in Cancer Cell Lines and Patient Tissue Images.
- **Technical Skills:** Tensorflow, OpenCV, Numpy, Pandas, Python, Linux, Git.
- Web development for AmpliconRepository, a Public Web Database of Oncogene Amplifications using NGS data.
- **Technical Skills:** Cloud Computing, Statistical Analysis, Database querying using MongoDB and Python's SQLite3.

Machine Learning Research Assistant
Jun 2022 - Jun 2023

UC San Diego School of Medicine

- Built a **Convolutional Neural Network** for Spatial Transcriptomics Image data, to perform **nuclear segmentation**.
- Used a **U-Net Architecture** to predict nuclei boundaries, bypassing the need for DAPI staining.
- **Technical Skills:** Tensorflow, Keras, NumPy, Pandas, Pytorch, PyLab, Python, Linux, Git.

Computational Bioinformatics Research Assistant
Oct 2021 - Jun 2022

UC San Diego Yeo Lab

- Developed computational applications for **long-read Oxford Nanopore Sequencing Data** analysis.
- Created an Error Correction Pipeline for **RNA-seq Analysis** using the Nanorevisor Deep Learning Library.
- **Technical Skills:** Python, Bash, STAR, Minimap2, Samtools, Linux, Pandas.

Software Engineering Intern
Jun 2021 - Aug 2021

Dotdash

- Designed front-end software for Dotdash, the largest digital publisher in the US, managing sites like Investopedia and Verywell Health.
- Developed cross-platform web applications in a collaborative environment using Agile/Scrum.
- **Technical Skills:** JavaScript, Vue, HTML, SASS, Maven, Database Querying, APIs.

Phage Genomics Research Initiative
Oct 2020 - Jun 2021

UC San Diego Pogliano Lab

- Created a BLAST parser website using Google App Engine and Python (GitHub), used by the UCSD professor and class.
- Queries the NCBI BLAST data to perform comparative genomic analysis of Bacteriophage genes with unknown functions.
- **Technical Skills:** Flask, Python, HTML, Google Cloud App Engine.

Journal Publications

Rajkumar*, Prasad*, et al., Accurate Prediction of ecDNA in Interphase Cancer Cells using Deep Neural Networks.
Submitted to *Nature Communications Biology* (Co-First Author Publication)

Luebeck et al. (2025), AmpliconSuite enables discovery of extrachromosomal DNA in tumor genomes.
***American Association for Cancer Research*, https://doi.org/10.1158/1538-7445.AM2025-3755**

Breakage fusion bridge cycles drive high oncogene copy number, but not intratumoral genetic heterogeneity or rapid cancer genome change.
***Nature Communications*, https://doi.org/10.1038/s41467-025-56670-8**

Lv et al. (2025), Spatial-Temporal Diversity of Extrachromosomal DNA Shapes Urothelial Carcinoma Evolution and Tumor-Immune Microenvironment.
***Cancer Discovery*, https://doi.org/10.1158/2159-8290.CD-24-1532**

Luebeck et al. (2024), AmpliconSuite: Analyzing focal amplifications in cancer genomes.
***Cancer Genetics*, https://doi.org/10.1016/j.cancergen.2024.08.015**

Mah et al. (2024), Bento: A toolkit for subcellular analysis of spatial transcriptomics data.
***Genome Biology*, https://doi.org/10.1186/s13059-024-03217-7**

Chapman et al. (2023), Circular extrachromosomal DNA promotes inter- and intratumoral heterogeneity in high-risk medulloblastoma.
***Nature Genetics*, https://doi.org/10.1038/s41588-023-01551-3**

Prichard et al. (2023), Identifying the core genome of the nucleus-forming bacteriophage family and characterization of Erwinia phage RAY.
***Cell Reports*, https://doi.org/10.1016/j.celrep.2023.112432**

Skills

Programming	Python (PyTorch, Tensorflow, Keras, Pandas, NumPy), R, C++, Cloud Computing, Bash, Linux, Git, JavaScript, Java, SQL.
Machine Learning	Experience With **Transformer Architectures**, **Convolutional Neural Networks**, and **ResNet Autoencoders**.
Bioionformatics	Research Focus in **Cancer Genomics**: Mechanisms and Modeling of Tumor Resistance.

Mentoring

2023 - 2024	**Data Science Capstone Mentor**, Mentored 3 Data Science undergrads in a Computer Vision capstone competition to semantically segment cell imaging data using deep learning.	*UC San Diego*
2023 - 2024	**Early Research Scholars Program Mentor**, Mentored 2 Computer Science undergrads in a project to extract mutational signatures from The Cancer Genome Atlas (TCGA) genome sequencing data.	*UC San Diego*

Achievements

June 2025	**NSF Graduate Research Fellowship**, Awarded for Outstanding Achievement in Bioinformatics Research	*National Science Foundation (NSF)*
Oct 2024	**Cancer Grand Challenge eDynamic Conference**, Presented a Computer Vision Model for Cancer Imaging	*Cancer Grand Challenge (NCI)*
Oct 2024	**Cancer Grand Challenge Future Leaders Speaker**, Presented on AI applications in Cancer Research	*Cancer Grand Challenge (NCI)*
June 2023	**Summa Cum Laude Honors**, Awarded for Exceptional GPA.	*UC San Diego*
April 2023	**Undergraduate Research Conference**, Presented on Computer Vision methods for FISH Imaging.	*UC San Diego*
Jul 2020	**UCSD BioScholars Honors Society Member**, Awarded membership based on academic achievement.	*UC San Diego*

Personal Projects

Autotune Implementation Using Phase Vocoder

github.com/GinoP123/AutotunePV.git *May 2023*

- Created an autotuner from scratch using Phase Vocoders and Yin pitch prediction.
- Able to autotune any audio clip to a specific major or minor scale using Hann window functions.
- Examples of popular songs autotuned here.

Custom Search Engine for Linux File System

github.com/GinoP123/FileSearch *Jul 2022*

- Created a keyword-matching search engine with caching fully from scratch using dynamic programming.
- Added learning capability by including popularity and relevance weights.
- I personally use this tool all the time, and find it a huge time-saver for navigating in Linux.