

Gino Prasad

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Machine Learning | Bioinformatics | Computer Vision | Generative AI | Data Science

Education

PhD, Computer Science: UC San Diego

Summer 2023 - Spring 2027

Academic Advisor: [Vineet Bafna](#), Professor of Computer Science

GPA 4.0/4.0

- **Relevant Courses:** Generative AI, Modeling of Large Language Models, Web Mining and Recommender Systems, Bioinformatics Algorithms

Bachelor of Science, Bioinformatics and Computer Science: UC San Diego

Fall 2020 - Spring 2023

Major: Bioinformatics (B.S.), Minor: Computer Science

GPA 3.97/4.0

- **Relevant Courses:** Deep Learning; Convex Optimization; Data Structures; Algorithms; Databases; Bioinformatics Lab

Experience

Applied Machine Learning Researcher

Jun 2022 - Current

UCSD Bafna Computer Science Lab

- Developed **Image Processing and Computer Vision** Tools for smFISH(Fluorescence in Situ Hybridization) Image Data
- **Technical Skills:** Python with Tensorflow, OpenCV, Numpy, Pandas, Linux, Git
- Web development for [AmpliconRepository](#), an ecDNA(extra-chromosomal DNA) Public Web Database.
- **Technical Skills:** MongoDB and Django for web framework, querying functionality using Python's SQLite3.

Machine Learning Research Assistant

Jun 2022 - Jun 2023

UCSD Yeo Bioinformatics Lab

- Built a **Convolutional Neural Network** for Spatial Transcriptomics Bioinformatics data.
- Uses **U-Net Architecture** and performs nuclear **semantic segmentation** without need for DAPI staining.
- **Technical Skills:** Python with Tensorflow, Keras, NumPy, Pandas, Pytorch, PyLab, Linux, Git.

Computational Research Assistant

Oct 2021 - Jun 2022

UCSD Yeo Bioinformatics Lab

- Developed computational applications for **long-read Oxford Nanopore Sequencing Data** analysis.
- Created Error Correction Pipeline for **RNA-seq Analysis** using [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

- Created a [BLAST parser website](#) using Google App Engine and Python ([GitHub](#)), used by the UCSD professor and class.
- **Technical Skills:** Flask, Python, HTML, Google Cloud App Engine.

Journal Publications

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>

Dehkordi et al. (2023), OM2BFB: Detecting and elucidating Breakage Fusion Bridge structures in cancer genomes using Optical Mapping data.

bioRxiv, <https://doi.org/10.1101/2023.12.12.571349>

Luebeck et al. (2024), AmpliconSuite: an end-to-end workflow for analyzing focal amplifications in cancer genomes.

bioRxiv, <https://doi.org/10.1101/2024.05.06.592768>

Lv et al., Spatial-Temporal Diversity of Extrachromosomal DNA Shapes Urothelial Carcinoma Evolution and Tumor-Immune Microenvironment.
Submitted to *Nature Genetics*

Rajkumar, Prasad et al., Accurate Prediction of ecDNA in Interphase Cancer Cells using Deep Neural Networks.
In Preparation (Co-First Author Publication)

Skills

Programming	Python (PyTorch, Tensorflow, Keras, Pandas, NumPy), R, C++, Bash, JavaScript, Java, HTML/CSS, SQL.
Machine Learning	Experience With Transformer Architectures , Convolutional Neural Networks , and ResNet Autoencoders .
Web Development	Developed applications with MongoDB, Django, Flask, Vue, and Google Cloud App Engine.

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

Oct 2024	Cancer Grand Challenge Future Leaders Speaker , Presenting a Computer Vision Model for Cancer Imaging	Cancer Grand Challenge (NCI)
June 2023	Summa Cum Laude Honors , Awarded for Exceptional GPA.	UC San Diego
April 2023	Undergraduate Research Conference Presenter , Presented on Image Processing with FISH Imaging.	UC San Diego
May 2022	Muir Caledonian Honors Society Member , Awarded for Exceptional GPA.	UC San Diego
Jul 2020	UCSD BioScholars Honors Society Member , Awarded membership based on academic achievement.	UC San Diego
2020-2022	UCSD Provost Honors , Awarded for Exceptional GPA.	UC San Diego

Personal Projects

Autotune Implementation Using Phase Vocoder

 github.com/GinoP123/AutotunePV.git May 2023

- Created an autotuner from scratch using Phase Vcoders 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.