

Gino Prasad

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Machine Learning | Computer Vision | Bioinformatics | Web & Full Stack Development | Data Science

Education

PhD, Computer Science: UC San Diego

Summer 2023 - Spring 2027

Advised by Vineet Bafna

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

Fall 2020 - Spring 2023 (expected)

Majoring in Bioinformatics (B.S.), Minor in Computer Science

GPA 3.97/4.0

- **Relevant Courses:** Data Structures; Algorithms; Convex Optimization; Databases; Linear Algebra; Multivariable Calculus; Bioinformatics Lab

Experience

Computer Science Research Assistant

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 - Current

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

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>

Chapman et al., Circular extrachromosomal DNA promotes inter- and intratumoral heterogeneity in high-risk medulloblastoma.
Submitted to Nature Genetics, 2023

Mah et al., Bento: A toolkit for subcellular analysis of spatial transcriptomics data.
Submitted to Nature Methods, 2023

Rajkumar and Prasad et al., Computer Vision Analysis of Oncogene Amplification in Interphase Cells.
In preparation, 2023

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

Skills

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

Achievements

May 2022	Muir Caledonian Honors Society Member , Awarded for Exceptional GPA.	<i>UC San Diego</i>
Jul 2020	UCSD BioScholars Honors Society Member , Awarded membership based on academic achievement.	<i>UC San Diego</i>
2020-2022	UCSD Provost Honors , Awarded for Exceptional GPA.	<i>UC San Diego</i>

Personal Projects

Autotune Implementation Using Phase Vocoder

 github.com/GinoP123/AutotunePV.git

May 2023

- Created an autotuner from scratch using Phase Vocoder 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.