Gino Prasad

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Machine Learning | **Computer Vision** | **Bioinformatics** | **Data Science**

Education

PhD in Computer Science, UC San Diego
NSF Graduate Research Fellow (Fall 2025 – Present)   *Summer 2023 – Spring 2027*
Academic Advisor: Vineet Bafna, Professor of Computer Science, Bioinformatics and Systems Biology   *GPA: 3.96 / 4.00*
- **Focus:** Applied Machine Learning and Computer Vision for Bioinformatics
- **Relevant Courses:** Deep Learning, Generative AI, 3D Physics Simulation, LLM Modeling, Recommender Systems

Bachelor of Science, Bioinformatics: UC San Diego   *Fall 2020 - Spring 2023*
Major: Bioinformatics (B.S.), Minor: Computer Science   *GPA 3.97 / 4.00*
- **Relevant Courses:** Machine Learning, Optimization, Probability & Statistics, Physics (Optics/Fluids), Linear Algebra, Algorithms

Experience

Data Science & Machine Learning Intern   *Jun 2025 - Aug 2025*
Genentech Research & Development (gRED Computational Sciences)
- Developed a **AI Computer Vision Model (VAE)** of **5M+** Cell Imaging Data samples of cancer cell lines to predict cell lifecycle stage.
- Utilized Gaussian Adaptive Thresholding to **Reconstruct Polygons** of High Density Regions from **3D Point Clouds**.
- Implemented an **LLM agent system** with **LangChain** for natural language querying and analysis of large-scale cell-line screening datasets.
- **Technical Skills:** Transformers, PyTorch, Scikit-Image, LLM Agents, LangChain, Deep Learning

Machine Learning Graduate Researcher   *Jun 2022 - Current*
UC San Diego Bafna Lab
- Developed interSeg, an **AI Computer Vision** Model for detecting ecDNA cancer presence in FISH cell imaging.
- **InterSeg** predicts **cancer subtypes** (ecDNA/HSR) in In-Vitro Cell Lines and Patient Tissue Images.
- Co-authored **EvidenceBench**, a benchmark for assessing LLM reasoning performance on biomedical papers.
- **Technical Skills:** Object Detection, PyTorch, TensorFlow, OpenCV, Skimage, Pandas

Computational Biology & Machine Learning Research Assistant   *Oct 2021 - Jun 2023*
UC San Diego Yeo Lab
- Built a **Convolutional Neural Network** for Spatial Transcriptomics Image data, to perform **semantic 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.

Software Engineering Intern   *Jun 2021 - Aug 2021*
People Inc.
- Designed front-end software for People Inc., 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, Google Cloud App Engine.

Publications

Rajkumar*, Prasad*, et al., Accurate Prediction of ecDNA in Interphase Cancer Cells using Deep Neural Networks.
bioRxiv Preprint, **https://doi.org/10.1101/2025.06.23.661188 (Co-First Author Publication)**

Wang et al. (2025), EvidenceBench: A Benchmark for Extracting Evidence from Biomedical Papers.
Conference On Language Modeling, **https://doi.org/10.48550/arXiv.2504.18736**

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**

Dehkordi et al. (2025), Breakage fusion bridge cycles drive high oncogene number with moderate intratumoural heterogeneity.
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

Achievements

June 2025	**NSF Graduate Research Fellowship**, Awarded for Outstanding Achievement in ML/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*

Skills

Machine Learning	Experience With **Computer Vision, Generative AI, Transformer Architectures,** and **Convolutional Neural Networks**.
Computer Vision	Research Focus in developing **AI Models** for **Cancer Imaging** and Tumor Modeling.
Programming	Python (PyTorch, JAX, TensorFlow, Keras, Pandas, NumPy), R, C++, Cloud Computing, Bash, Linux, Git, JavaScript, Java, SQL.

Mentoring

2023 - 2024	**Data Science Capstone Mentor**, Mentored 3 Data Science undergraduates 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 undergraduates in a project to extract mutational signatures from The Cancer Genome Atlas (TCGA) genome sequencing data.	*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, completely 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.