Surya Vishnubhatt

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EDUCATION

Weill Cornell Graduate School of Medical Sciences, New York, NY **May 2024**

- M.S. in Computational Biology
- GPA: 4.0
- Relevant Coursework: Analysis of Next-Generation Sequencing (NGS) Data, Functional Interpretation of High-Throughput Data, Quantitative Genomics and Genetics, Foundations of Data Science, Applied Machine Learning, Deep Learning

University of California, Davis, Davis, CA **June 2022**

- B.S. in Biomedical Engineering, Highest Honors
- GPA: 3.96
- Relevant Coursework: Data Structures and Algorithms, Computational Genomics, Probability & Data Science for Biomedical Engineers, Molecular Control of Biosystems, Protein Engineering, Biotransport Phenomena, Cell & Tissue Engineering

EXPERIENCE

Weill Cornell Medicine Sandra and Edward Meyer Cancer Center, New York, NY **July 2023 - Present**

Graduate Researcher at the Khurana Lab

- Developing a machine learning model that functions as a predictive tool that can serve to explain metastatic cancer mutations, using annotations from primary colorectal cancers, which lends key insight towards identifying the cell type of origin of metastasized cancers.
- Analyzed molecular oncology NGS data and implemented machine learning pipelines with multi-omic data.
- Leveraged expertise in epigenomics and data science, integrated multiple databases including: The Cancer Genome Atlas (TCGA), Pan-Cancer Analysis of Whole Genomes (PCAWG), ENCODE, Gene Expression Omnibus (GEO), and the Hartwig Medical Foundation (HMF) Metastatic Genome Database.
- Implemented analysis of ATAC-seq, HiChIP, ChIP-seq, Replication Timing, and Whole Genome Sequencing (WGS) data.

Weill Cornell Medicine Feil Family Brain & Mind Research Institute, New York, NY **April 2023 - November 2023**

Graduate Researcher at the Tilgner Lab

- Developed statistical methods to analyze single cell RNA-seq data across multiple cell types derived from fresh-frozen human brain samples.
- Implemented a simulation based approach to distinguish differences in frontotemporal dementia (FTD) associated splicing changes across different neural cell types.

University of California, Davis, Davis, CA **September 2021 - June 2022**

Lead Developer: Digital Detection of Neurological Disorders

- Collaborated with UC Davis engineers, NEquest (a San Francisco based startup), and medical professionals to develop an artificial intelligence-augmented exam platform to facilitate early detection and diagnosis of neurological disorders such as Parkinson's and Alzheimer's.
- Led construction on the platform, leveraging expertise in digital signal processing, data analysis, and machine learning.

University of California, Davis, Davis, CA **June 2021 - June 2022**

Undergraduate Researcher at the Korf Lab

- Led development on a project that integrated the AlphaFold protein structure database in the quality assessment of protein sequence and structure.
- Designed and implemented algorithms to integrate AlphaFold data with other proteomic sequence and structure data.

University of California, Davis, Davis, CA **November 2020 - April 2021**

Undergraduate Researcher at the George Lab

- Used MATLAB to capture and analyze bioimaging data of rolling endothelial cells.
- Utilized Fiji, an open-source software, to process images and extract data.

ADDITIONAL EXPERIENCE

University of California, Davis, Davis, CA **October 2018 - January 2020**

Undergraduate Researcher at the Tan Lab

- Collaborated on a synthetic biology project aimed at enhancing the survival of probiotics in the gut environment.
- Utilized ApE software to edit existing and construct new plasmid structures.

SKILLS

- Bioinformatics, Computational Biology, Machine Learning, Deep Learning, PyTorch, TensorFlow, Data Science, Perl, Python, Pandas, NumPy, scikit-learn, R, UNIX/Linux, BASH, SQL, C++, Java, Javascript, HTML, MATLAB, Julia, SAS, High-Performance Computing, Slurm Workload Manager, Single-cell RNA-seq, Data Analysis, Computational Oncology, Computational Neuroscience, Conda, Git, Bioconductor, Biopython, BLAST, BWA, SAMtools, BedTools, DeepTools, GATK, Bowtie, Picard, STAR, CellRanger, UCSC Genome Browser, Sequest, Byonic, PD, MaxQuant, PEAKS, Genomics, Proteomics, Protein Engineering, Epigenomics, Multi-omics, Biostatistics, Databricks, Nextflow, Snakemake, Snowflake, WDL, dbt, 10X scRNA-seq Data Processing, Google Cloud Platform (GCP), Amazon Web Services (AWS), Tableau, SOLIDWORKS, PyMOL, QIIME/QIIME2, Qiita, Uniprot DB, AlphaFold DB, ApE and Benchling, DNA purification, PCR, Gel electrophoresis

PUBLICATIONS AND PRESENTATIONS

2023 Johnson and Johnson Sponsored Cornell Health Hackathon **February 2023**

- Designed a medical device prototype to track neurodegenerative disease progression in elderly patients, pitched the idea to a panel of expert judges working in the biotech/pharma industry.

UC Davis College of Engineering Design Showcase **June 2022**

- Presented and modeled designed prototype for the Digital Detection of Neurological Disorders to peers and experts in the biomedical industry.

Literature Review: "Computational Strategies in the Treatment and Analysis of COVID-19" **March 2022**

- Worked with editors from the Aggie Transcript, an undergraduate life sciences journal at UC Davis, to publish a literature review paper on past and current computational strategies in the treatment and analysis of COVID-19.

UC Systemwide Bioengineering Symposium, University of California at Merced **June 2019**

- Presented a poster about research into the engineered stochastic adhesion between microbes and the potential therapeutic benefits of synthetically stimulated microbial aggregation in probiotics.

AWARDS AND HONORS

Member of the UC Davis chapter of the Phi Kappa Phi Academic Honor Society **Spring 2020 - June 2022**

- Membership is by invitation only to UC Davis' top 7.5 percent of second term juniors and top 10 percent of seniors.

Dean's Honors List, Engineering at University of California, Davis **Fall 2019 - June 2022**

- Top 16% in the College of Engineering.

Dean's Honors List, Biological Sciences at University of California, Davis **Fall 2018 - Spring 2019**

- Top 15% in the College of Biological Sciences.