# Himay (Mickey) Makhija

## ASSOCIATE SCIENTIST

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I am a highly motivated and dedicated professional with a strong passion for **integrating life sciences and technology**. Through the Cornucopia project, I **have successfully leveraged AI** to enhance **bioinformatics tools**, showcasing my commitment to innovation in this dynamic field. My vision is to bridge the gap between computer science and biotechnology, recognizing the immense potential for innovation at this intersection. I am particularly excited about the opportunity to work with **Large Language Models (LLMs)** and **AI techniques**, driven by the potential to revolutionize data analysis and decision-making in the biotech industry.
My goal is to **apply cutting-edge AI** and **machine learning (ML)** strategies to address complex challenges and **drive impactful solutions**.

## EXPERIENCE

### Associate Scientist Cardiometabolic Disorders
**July 2023 - Present**
**Amgen** — **South San Francisco, CA**
- Enhanced analysis efficiency and accuracy by utilizing the **Cytoself machine learning model**, trained on **custom image data and protein localization information** using **TensorFlow/PyTorch**, and applying **UMAP** for dimensionality reduction.
- Characterized cell lines by generating data in lab and analyzing using statistical methods through tools such as Python, Excel and GraphPad.
- **Reduced research time** by **85.71%** by using Opera Phenix in conjunction with **Cell-Pose API**, Excel, **SQL**, and **Pandas**.
- **Automated the analysis of animal study data** by developing a custom tool, replacing manual processes and saving hours of analysis time.
- Increased image analysis accuracy by programming a custom script that **automated statistical image analysis** of an **angiogenesis assay**.
- Implementation of Laboratory Information Management System (**LIMS/IDBS**), resulting in accurate data recording and retrieval of results.
- Worked on high-content screening projects and **optimized cell segmentation** through the application of **Convolutional Neural Networks** (**CNN**) with imaging data, **enhancing** the **precision of cell segmentation** and **analysis**.

### Research Associate 2 Gene Therapy
**January 2023 - June 2023**
**BioMarin Pharmaceutical Inc** — **San Rafael, CA**
- Developed a real-time visualization and data integration tool using **SQL** and **DAX**, extracting and cleaning datasets from Monday.com, transforming them into a structured format, and linking them to a **Power BI dashboard** for **enhanced data visualization**.
- Enhanced cross-department collaboration by sharing real-time data through internal presentations to inform decision-making.

### Research Associate
**September 2022 - January 2023**
**Optimized Foods** — **Davis, CA**
- Functioned as a production associate ensuring GMP with molecular biology and cell culture techniques to produce large batches of product.
- Analyzed data in **python** using **pandas** allowing us to identify cost effective approaches to manufacture cell-cultured caviar.
- Improved caviar texture and taste, **increasing customer satisfaction by 20%**
- Developed cost-effective cultivation processes to **reduce manufacturing costs by 40%.**

### Research and Innovation Core Intern
**June 2022 - September 2022**
**Cepheid, a Danaher Company** — **Sunnyvale, CA**
- Assisted with **Project Management (Agile: Sprint)** of HIV diagnostic tests and optimized a novel diagnostic PCR test.
- Designed primers and probes for optimal PCR diagnostics using **Geneious**.
- Created a tool using **Python** to batch analyze diagnostic data, **reducing analysis time** by **200 hours** and increasing result accuracy.

### Lab Associate and Teaching Assistant
**August 2021 - June 2022**
**UC Davis** — **Davis, CA**
- Familiarized students with laboratory techniques and GLP regarding **sequencing data analysis** (**SEURAT**) and PCR.
- Performed cell transformations on DH5A E. coli cells with BglB gene.
- Performed Kinetic and Thermostability assays on mutant E. coli cells expressing BglB protein to purify and quantify the target protein.
- Increased the accuracy of student reports by 20% and strengthened student understanding of laboratory skills and protocols by facilitating one-to one instruction and guidance.

## Personal Projects

### Cornucopia.com
- Spearheaded the conceptualization and development of the Cornucopia project, employing **fine-tuning**, Retrieval-Augmented Generation (**RAG**), and **de novo training** to develop a personalized model for parsing user text data (PDF) and storing it as **vector embeddings**.
- Innovated and enhanced various **bioinformatics tools** by incorporating **ML models**, introducing an **interactive GUI**, and optimizing code for **improved speed and efficiency**.

### Mknoir.com
- Personal portfolio highlighting Cheminformatics projects that automate data analysis and actively pull information from multiple databases.

## EDUCATION

### Bachelor of Science in Biochemistry and Molecular Biology
**Minor in Statistics**
**UC Davis** • Davis, CA

## SKILLS

**Tech Stack:** R, **Python**, Power BI, Benchling, IDBS, Excel, PowerPoint, JavaScript, **PyTorch**, **TensorFlow/Keras**, **SKlearn**, **Langchain/smith**, Snap Gene/Geneious, React, **SQL**, GraphPad Prism, **Pandas**, MuleSoft, Informatica, **AWS** (EC2, RDS, S3), **FAISS**, **Pinecone**, **Git**, Jenkins, **Transformers**, Maven, Salesforce, SDLC.
**Languages:** English, Hindi, Russian.