
Education

Massachusetts Institute of Technology - S.B. in Biological Engineering, GPA 5.0/5.0

May 2024

Relevant Experience

BillionToOne - Research Associate, Oncology R&D Team

Jun 2025 - present

- Developed aneuploidy and methylation-based cfDNA biomarker panels for Northstar Response v3 ([v1 link](#)) using WGBS and Illumina 450K array data for minimal residual disease (MRD) detection in post-op early-stage cancer patients via liquid biopsy.
- Achieved a **million-fold lower rate** of misclassified NGS reads by implementing bug fixes to python and R scripts in existing production-grade bioinformatics pipeline.
- Improved existing 0.01% tumor fraction Northstar Response v2 LOD to **MRD-grade LOD** [est launch: EoY 2026] through background subtraction and locus screening based on FACS identification of healthy cell contributors to cfDNA noise.
- Presented findings to the CTO on a weekly basis, and the greater C-suite on a quarterly basis.
- Joined the Senior Scientist hiring committee as the only RA (**1 of 15**) among other Senior Scientists and C-suite leaders.

Smart Eye Care NYC - Medical Assistant

Jun 2024 - Apr 2025

- Took comprehensive medical histories, conducted eye examinations, and led informed consent discussions about risks and benefits of surgical and laser procedures for 30 - 50 patients per day.

MIT Dept. of Biological Engineering - Teaching Assistant for 20.309 - Instrumentation and Measurement

Jan 2024 - May 2024

- Assisted 30 students with MATLAB-based systems modeling, signal processing, and image analysis, as well as laboratory sessions involving building a microscope, circuit board, and microfluidic chip.
- One of 3 students from the previous year's class (**Top 10%**) selected for a teaching role.

Broad Institute of MIT and Harvard - Research Assistant, Deborah Hung Lab

Jun 2021 - Nov 2023

- Developed a 107x multiplex PCR and CRISPR-Cas13 SHERLOCK cfDNA diagnostic assay with 0.1 genome equiv. analytical LOD for hospital-acquired *S. aureus* infections via bioinformatic screening of WGS data to identify gene targets.

Stanford Sarafan Chem-H - Research Intern, Peter S. Kim Lab

Summer 2019

- Engineered hyperglycosylated mutant hemagglutinin A candidates for a universal influenza vaccine and conducted bio-layer interferometry assays to test antibody binding to vaccine candidate constructs.

Selected Academic Projects

Computer-aided diagnosis of Long COVID from lung X-Ray images

May 2024

- MIT 6.8300 Advances in Computer Vision graduate-level final project, by Ria Kolli and Vicky Zheng.
- Benchmarked VGG11, ResNet50, and Vision Transformer architectures in PyTorch for 3-class chest X-ray classification; ViT-Base16 achieved 0.96 F1-score across Long COVID, Ongoing COVID, and Normal classes.
- Curated a 626-image dataset from NIH MIDRC and Kaggle, preprocessing with Gaussian blur and histogram equalization.

Leadership & Service

MIT DynaMIT - Co-Director, [prev]: MechE, Finance, Mentor Relations Chair

Oct 2020 - Sep 2024

- Organized 2 weeks of STEM summer camp for 90 local middle school students from underserved educational backgrounds.
- [Aug 2023] Managed 20-person board and 25 mentors for Week 1 program; advised new directors for the 2024 program.
- Created and executed MechE day curriculum of engaging projects to introduce physics and engineering principles.
- Sourced \$6K in public service grant funding to increase working budget to \$16K; managed all club expenses.
- Recruited 50 MIT undergrads as mentors, maintaining 70% YoY retention rate among non-graduating mentors.

MIT MedLinks - Residential Director

Nov 2020 - May 2024

- Led a team of 10 student "MedLinks" to host wellbeing events and distribute first aid and OTC medical supplies to the 388 residents of Burton Conner House through a collaboration with the on-campus medical provider, MIT Medical.

MIT Undergraduate Association Innovation Committee

Nov 2020 - May 2021

- Managed a \$70K grant to design and maintain the MIT Banana Lounge, a campus space providing free bananas, coffee, and tea.
- Collaborated with facilities managers to bring free menstrual products to bathrooms on main campus.

Boston Children's Hospital - Volunteer, Hematology & Oncology Ward

Mar 2023 - May 2024

- Provided 30-40 min of volunteer childcare to 6-8 pediatric cancer patients per shift to help alleviate parental stress.

Y2Y Youth Homeless Shelter - Volunteer

Jan 2024 - Apr 2024

- Supervised and organized social activities, cooked meals, and maintained the living space for 80 homeless youth.

Skills

Computational: Python, R, PyTorch, MATLAB, Bash, Samtools, Bedtools, SQL, AWS Cloud Computing

Laboratory: PCR, CRISPR, NGS (Illumina NovaSeq X-series), FACS, Microscopy, Bio-Layer Interferometry