

RAEHASH SHAH

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EDUCATION

Integrated Master of Science in Computational Biology

2024 – 2025

Bachelor of Science in Computational Biology

2020 – 2024

School of Computer Science, Carnegie Mellon University // Pittsburgh, PA

EXPERIENCE

Bioinformatician II at CareDx // Brisbane, CA

09/2025 – present

- Analyzed Xenium samples to generate novel insights on the mechanism of action in Antibody Mediated Rejection and aid pharmaceutical companies assess how a drug may treat transplant rejection.
- Automated a cfDNA deconvolution pipeline for multi-genome samples through analysis of the SNP profile from AlloSure.

Computational Pathology Intern at UPMC CPACE // Pittsburgh, PA

05/2025 – present

- Developed course for medical students introducing and applying concepts of Generative and Non-Generative AI to medicine.

Computational Biologist Intern at GENIE Lifesciences // Remote

10/2023 – 08/2024

- Classified about 7,000 diseases using publicly accessible data based on clinical profiles, molecular pathways, gene expression profiles and epidemiological data to identify diseases similar to the company's drug target profile.
- Created a PubMed search engine that uses Natural Language Processing & Knowledge Graph techniques to characterize and summarize the results of those articles which accelerates the time to find published work and data by over 25%.

Bioinformatician Intern at Regeneron // Rensselaer, NY

05/2023 – 07/2023

- Trained a Structured State Space Diffusion model on Oxford Nanopore Technology signal data in a Good Manufacturing Processes environment to generate viral and host signal data which were basecalled into indistinguishable DNA reads.

Software Systems Engineer Intern at Werfen // Bedford, MA

05/2022 – 08/2022

- Designed and developed a Time-division multiplexing Protocol Sniffer for a RS485 Bus to troubleshoot data packets passed between the layers of a throughput hemostasis testing instrument firmware.
- Led daily standups with a cross-functional team as a Scrum master in an Agile work environment (Agile Atlassian Certified).

LEADERSHIP

Teaching Assistant for Computational Medicine, Algorithms, Great Ideas in Computational Biology

01/2023 - 05/2025

- Organized course material, created problem sets, taught recitations & answered students' questions to promote learning in courses.

President of Computational Biology Undergraduate Society

09/2022 – 05/2024

- Spearheaded the Integrated Master's program in Computational Biology by assisting in designing the curriculum and obtaining administrative approval. Co-Organizer of International Society for Computational Biology GLBIO 2024 Conference Workshop.

PUBLICATIONS

"BatchBlend: A Batch-Aware Interpretable Probabilistic Graphical Model for Integrating Spatially Resolved Transcriptomes" (2025) Shah R., Alam S., Ma J., <https://www.proquest.com/docview/3217375557>

- Master's thesis on deriving the optimization of a novel NMF-HMRF model, BatchBlend, that learns batch specific parameters and implementing the model to integrate coronal mice brain spatial transcriptomics data (CosMx, MERFISH).

"Pan-Cancer PDOs Preserve Tumor Heterogeneity and Uncover Therapeutic Vulnerabilities" (2025) Kuo H., Bhinder B., ... Shah R., ... Elemento O., Sboner A., Martin M. L., <https://doi.org/10.1101/2025.04.10.647635>

- Analyzed tumor heterogeneity across 300 primary samples and patient derived organoids (PDOs) at different points of cell culture through Hierarchical Clustering, PCA and Differential Gene Expression Analysis in R.

"SCN9A: Proposal of Voltage-Gated Ion Channels as a Novel Diagnostic Marker for Alzheimer's Disease" (2023) Shah D., Shah R., Waldron A., Leonardi D., <https://doi.org/10.1101/2023.05.18.23289925>

- Performed Gene Set Enrichment Analysis and Logistic Regression Analysis on mRNA and bulk RNA-seq data.

SKILLS

Bioinformatics Tools: Bioconductor, Clustal, SAMtools, Seurat, GEO, GATK, VMD, PyMOL, Pytorch, Tensorflow, AWS

Programming Languages: Python, R, C, Java, HTML, CSS, Go | **Spoken Languages:** English, Gujarati, Spanish, Hindi