

Samuel Bharti

Computational biologist · apps, packages, and workflows for omics data

Birmingham, AL

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Summary

I'm a doctoral researcher at the University of Alabama at Birmingham (UAB). My research develops multi-omics integration tools and models for diagnosing and treating Neurofibromatosis Type 1 (NF1) and its associated cancers. Alongside it I own six open-source packages for omics data across R, Python, and TypeScript, most of them written on the Shiny team at Posit.

Skills

languages	R, Python, SQL, TypeScript, JavaScript, Bash, Git, GitHub
data products	R Shiny, Quarto, ggplot2, Plotly, D3
bioinformatics	single-cell & spatial transcriptomics, bulk RNA-seq, multi-omics integration, Seurat, DESeq2, nf-core / Nextflow
infrastructure	reproducible workflows, Docker, AWS, GCP, HPC / SLURM
agentic AI	agent systems, tool calling, MCP, LLM apps, machine learning

Experience

Software Engineering Intern, Posit May 2026 - Aug 2026

- Owned five packages end to end, from API design through release: biobouncer, biohttp, bioclients, biocohort, and plotomics.
- Contributed seven merged pull requests upstream to the Shiny ecosystem, and the first shinyreact release credits me as a New Contributor.
- Built more than ten apps across R, Python, and JavaScript, mostly for computational biology and bioinformatics.

Human Genetics gRED Intern, Genentech Jun 2025 - Aug 2025

- Built MOLV, a Shiny platform and R package for locus-first visualization across 11,000+ GWAS, eQTL, pQTL, single-cell, and ATAC-seq datasets in Alzheimer's disease.
- Built its components and workflows so the same locus view worked across every dataset.

Graduate Research Assistant, Center for Genomics and Data Science, UAB Aug 2022 - Present

- Own the single-nuclei and multi-omics analysis of NF1-associated tumor models, from quality control to the shortlist of drugs worth testing.
- Built and deployed 5+ Shiny applications and internal tools on UAB research infrastructure for visualization, sample tracking, QC review, and multi-omics exploration.
- Caught sample contamination in 3' datasets that quality control had passed, and had it confirmed by the platform vendor.

Business Development Fellow, Harbert Institute (HIIE), UAB Dec 2023 - Present

- Assessed the commercial potential of 12 UAB technologies and prepared licensing materials.
- Automated internal workflows with Power Automate and the Microsoft Graph API.

Chief Technical Officer, FundU Games Pvt. Ltd. Feb 2021 - Aug 2022

- Led an 8-person team building a FinTech product with React, Node.js, R Shiny, MongoDB, and Docker.

Bioinformatics Engineer, STEM-Away Jun 2021 - Aug 2022

- Mentored international student teams and built the bioinformatics course materials and app templates they deployed themselves.

Open source

rentrez	Active maintainer, rOpenSci	
shinyreact	Contributor, Posit	3 merged
Shiny	Contributor, Posit	3 merged
htmltools	Contributor, Posit	1 merged

Projects

tahoe-explorer	Subset 100.6M rows and leave with a pull recipe.	live app github
genescout	An agentic evidence-review workbench.	live app github
variant-reviewer	One gene, one variant, one page.	live app github
Plotomics Live	Twenty-six GPU-rendered pages in 476 lines of R.	live app github
recount-explorer	Browse, QC, and export 18,998 recount3 studies.	live app github

Selected publications

[GlucoKinaseDB: A comprehensive, curated resource of glucokinase modulators for clinical and molecular research](#) *Computational Biology and Chemistry*, 2023

[PepEngine: A Manually Curated Structural Database of Peptides Containing \$\alpha\$, \$\beta\$ -Dehydrophenylalanine \(\$\Delta\$ Phe\) and \$\alpha\$ -Amino Isobutyric Acid \(Aib\)](#) *International Journal of Peptide Research and Therapeutics*, 2022

[Statistical Enrichment Analysis of Samples: A General-Purpose Tool to Annotate Metadata Neighborhoods of Biological Samples](#) *Frontiers in Big Data*, 2021

Education

Ph.D., Biomedical Engineering & Bioinformatics, UAB

Expected 2027

Certificate, Biomedical Innovation to Clinical Practice, UAB

B.Tech., Bioinformatics, Amity University

Teaching and leadership

- **President**, Informatics Club, UAB (2023 - 2025). Grew computational training across departments through workshops, peer-learning sessions, and professional-development seminars.
 - **Certified Instructor**, The Carpentries (2024 - Present). Taught workshops on R, Git, Bash, and Python at UAB's Biological Data Science Core.
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Honors and certifications

- Claude Science Hackathon, one of 500 participants selected globally (2026)
- Google Cloud Research Credit Award, Google (2026)
- Elected Member, Tau Beta Pi Engineering Honor Society, UAB (2025)
- Blazer Graduate Research Fellowship, UAB (2022 - 2023)
- EMBL-EBI: Single-cell RNA-seq Analysis with Python (35 hours, Feb 2025)
- EMBL-EBI: Cancer Genomics and Transcriptomics (32 hours, May 2025)
- NVIDIA: Fundamentals of Deep Learning

The remaining 5 publications, 5 conference presentations and all 33 projects are on the [full CV](#).