Samuel Bharti

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

Birmingham, AL

samuelbharti.io@gmail.com · samuelbharti.com · github.com/samuelbharti · linkedin.com/in/samuelbharti · orcid.org/0000-0003-4190-7058

Summary

I'm a PhD candidate in biomedical engineering and bioinformatics at the University of Alabama at Birmingham, where I own the multi-omics analysis of Neurofibromatosis Type 1 (NF1) tumor models from quality control through to the drug shortlist. I also own six open-source packages for omics data in R, Python, and TypeScript. The apps I build on them run on research infrastructure, in the hands of the scientists who generated the data.

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

PhD Candidate, 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.

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.

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 α, β-Dehydrophenylalanine (ΔPhe) and α-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.

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.