Samuel Bharti

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SUMMARY

PhD candidate in Computational Biology at UAB with experience building reproducible data applications, scientist-facing tools, and multi-omics visualization platforms in R, Python, Shiny, and Quarto. Former Genentech intern and startup CTO with a strong record of developing modular tools, interactive reports, and deployable workflows for research users. Interested in open-source software, technical communication, and building high-quality example content that helps teams publish and share data science work on a scale.

SKILLS

- **Programming:** R, Python, Bash, SQL, Git/GitHub
- **Data products and technical communication:** Shiny, Quarto, Jupyter, Markdown, interactive reporting
- **Software and workflows:** modular development, reproducible workflows, Docker, APIs, workflow automation
- **Deployment and infrastructure:** Posit-style publishing workflows, cloud, HPC environments, SLURM, AWS, GCP
- **Agentic AI and tool orchestration:** Google ADK, OpenAI APIs, LangChain, MCP, A2A, tool calling
- **Biomedical data applications:** multi-omics analysis and integration, visualization, scientist-facing tools

EXPERIENCES

Jun 2025 – Aug 2025

Genentech Human Genetics gRED Intern, Genentech, South San Francisco, CA

- Designed and built a modular scientific software platform and supporting R package for locus-centered visualization across 11,000+ GWAS, eQTL, pQTL, single-cell, and ATAC-seq datasets in Alzheimer's disease.
- Developed reusable components and reproducible workflows for interactive cross-dataset exploration, hypothesis review, and scientist-facing analysis.
- Collaborated with scientists and engineers to integrate the platform within secure internal systems and presented the work to the Human Genetics department.

Aug 2022 – present

Graduate Research Assistant, Center of Genomics and Data Science, UAB

- Performed computational analysis of single-cell and multi-omics datasets to generate testable hypotheses in disease-focused studies.
- Built and deployed multiple Shiny applications and internal research tools for interactive visualization, sample tracking, QC review, and multi-omics exploration on UAB research infrastructure.
- Developed reproducible workflows and interfaces to help researchers explore complex experimental data and share results more effectively.
- Investigated noisy and heterogeneous experimental data, including QC analysis of 3' OCM datasets and validation discussions with external partners.

Dec 2023 – present

Business Development & Marketing Fellow, Bill L. Harbert Institute for Innovation and Entrepreneurship (HIIE), UAB

- Built automated internal workflows using Power Automate and Microsoft Graph API to streamline operations and improve team communication.
- Conducted technical and market research supporting commercialization and cross-functional communication.

Feb 2021 – Jan 2023

Chief Technical Officer, FundU Games Private Ltd., Delhi, India

- Led 8-person team overseeing FinTech product development using React, Node.js, R Shiny, MongoDB and Docker for scalable deployment.
- Managed company's AWS infrastructure, securing initial funding.

Jun 2021 – Aug 2022

Bioinformatics Engineer, STEM-Away, USA

- Mentored international student teams, developed bioinformatics course materials and app templates for scalable deployment.

EDUCATION

Aug 2022 – Present

Doctor of Philosophy (Biomedical Engineering and Bioinformatics)
The University of Alabama at Birmingham (UAB), Birmingham, AL, USA

Aug 2023 – Aug 2024 **Certificate in Translation of Biomedical Innovation to Clinical Practice**
The University of Alabama at Birmingham (UAB), Birmingham, AL, USA

Aug 2017 – Jul 2021 **Bachelor of Technology (Bioinformatics)**
Amity University, Noida, India

HONORS & AFFILIATIONS

- Electee, **Tau Beta Pi Engineering Honor Society**, UAB, 2025
- Student Member**, American Association for Cancer Research (AACR),** 2024 – Present
- **Blazer Graduate Research Fellowship** (16 months), UAB, 2022 – 2023
- **Professional Development & Travel Awards** (UAB CCTS & UAB GSG), UAB, 2022 – 2024

PROJECTS

[1] MOLV (Multi-Omics Locus Viewer):
- Shiny application and R package developed for Human Genetics teams at Genentech to visualize multi-omics data starting from a genomic locus.
- Built for interactive, locus-first exploration across multiple data modalities.

[2] SEAS (Statistical Enrichment Analysis of Samples):
- Shiny application tool for metadata neighborhood enrichment and clinical outcome-oriented analysis in omics datasets, including glioblastoma-related applications.

[3] Pediatric Thyroid Cancer Explorer: Interactive oncoplot + clinical distributions for WES/bulk RNA-seq

[4] scRNA-seq Analysis Integration App (deployed in-house):
- Shiny application integrating nf-core outputs with Seurat, pseudobulk, and CellChat for end-to-end sn/scRNA-seq analysis exploration.
- Designed to unify outputs from multiple workflows in a single interactive interface

[5] R Shiny Template:
- Reusable public template repository for rapid development of bioinformatics and data applications in R Shiny.
- Emphasizes modular structure and reproducible app development.

[6] sMAP (Standard Microarray Analysis Pipeline App):
- R Shiny application for transcriptomics analysis with quality control, statistical analysis, and biomarker discovery, designed for non-coding users.

[7] PAGER Web App / PAGER 3: Pathway and gene-set enrichment database infrastructure and Shiny-based web application supporting network-style exploration and biological interpretation.

[8] RAPTOR (Record-based Abstraction of Phenotypes, Terms, Ontologies, and Disease Relations): An agentic AI system to extract phenotypes, genes, diseases, and ontology-linked concepts from unstructured patient records.

[9] GlucoKinaseDB and PepEngine: peptide and small-molecule database, structural visualization, and API endpoints.

PUBLICATIONS

- https://orcid.org/0000-0003-4190-7058 (8)

OUTREACH AND TEACHING EXPERIENCE

Jan 29 – 30, 2026 **Instructor**, Carpentry workshop on "R and Git", UAB-Biological Data Science Core

Jul 9 – 10, 2024 **Helper**, Data Science workshop on "Bulk RNA-seq", UAB-Biological Data Science Core

Mar 18 – 19, 2024 **Instructor**, Carpentries workshop on "Bash Shell, Git, Text Editor, and Python", UAB

Dec 14 – 15, 2023 **Instructor**, Carpentries workshop on "Bash Shell, Git, Text Editor, R", UAB

Nov 23, 2021 **Mentor**, STEM-AWAY: "**Deployment of R Shiny Bioinformatics App on AWS**"
Delivered a talk on containerized bioinformatics and deployment using AWS followed by a live demo on launching and connecting to an EC2 instance, and docker deployment.

LEADERSHIP AND VOLUNTEER EXPERIENCE

Apr 2023 – Jan 2025 **President**, Informatics Club, UAB