Rohan Butani

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Education

JOHNS HOPKINS UNIVERSITY Baltimore, MD

B.S. in Computer Science and Chemical & Biomolecular Engineering *Anticipated Graduation May 2028*

- Activities and Societies: Army ROTC, Quiz Bowl, Student Advocates for Low-Income Health

Experience

Johns Hopkins University School of Medicine Baltimore, MD

Research Assistant, Division of Infectious Diseases – Advised by Prof. Tornheim *September 2025 – Present*

- Designing and implementing Python ETL pipelines to transform MDR-/XDR-TB relational databases into analysis-ready schemas; automated data validation and feature-extraction scripts for model training.
- Developing machine learning pipelines for hazard function estimation of tuberculosis risk.

Johns Hopkins University Baltimore, MD

Research Assistant, Institute for Computational Medicine – Advised by Prof. Bader *September 2025 – Present*

- Conducting HEK cell protein–protein interaction (PPI) network analyses using Python and R, mapping HGNC symbols and expanding cross-reactive antibodies into distinct multi-protein complexes.
- Automating multi-complex batch submission to AlphaFold using shell/Python scripts; parsed and visualized structural predictions using PyMOL, integrating outputs with protein-interaction databases.

The Wharton School Institute of AI and Analytics Remote

Student Researcher, Lead and Corresponding Author – Advised by Prof. Bradlow *June 2025 – October 2025*

- Scraped and cleaned NFL performance and health data with Python (requests, BeautifulSoup, Selenium, Pandas).
- Engineered demographic, travel, and workload features; trained and tuned classification models (scikit-learn, XGBoost, PyTorch (TabNet), TensorFlow) predicting injured reserve placement.
- Accepted to the 2025 IEEE MIT Undergraduate Research and Technology Conference, 2025 IEEE Engineering in Medicine and Biology Society (EMBS) International Conference on Biomedical and Health Informatics.

Georgia Institute of Technology School of Mathematics Remote

Student Researcher, Lead and Corresponding Author – Advised by Prof. Goldsztein *May 2024 – June 2025*

- Engineered end-to-end machine learning pipelines in Python for predicting UCL reconstruction in baseball pitchers, achieving novel 79.2% accuracy. Implemented feature importance visualization with SHAP and Matplotlib.
- Published results on IEEE Xplore in the *Proceedings of the International Conference on Healthcare Informatics*. Conference travel funded by NSF Student Grant ($3,500).

Technical Projects

GlucaGone July 2025 – Present

- Architected and deployed a full-stack diabetes risk prediction platform using Flask for the backend and React/Tailwind for the frontend; implemented RESTful APIs for model inference and asynchronous request handling with deployment on Render, integrating scikit-learn models for real-time prediction and monitoring.
- Integrated SHAP-based interpretability visualizations and real-time error-logging middleware; containerized the application with Docker and configured automated build pipelines on Render for seamless deployment.

No Passage, No Problem – Independent NLP Research May 2025 – Present

- Built automated Python pipelines using Hugging Face Transformers and OpenAI API to evaluate LLM artifact sensitivity through partial-input ablations on multiple-choice reading comprehension (MC-RC) benchmarks.
- Automated 100K+ GPU evaluations with batched inference, caching, and structured result logging using Pandas and JSON storage; work accepted to NeurIPS 2025 Workshops on LLM Evaluation and Efficient Reasoning.

Technical Skills

- **Languages:** Python, Java, R, MATLAB, Bash
- **Frameworks & Libraries:** Flask, FastAPI, React, TensorFlow, PyTorch, scikit-learn, XGBoost, Pandas, NumPy
- **Tools & Platforms:** Git, Docker, Render, AWS, Jupyter, LaTeX
- **Concepts:** Object-Oriented Design, Machine Learning Pipelines, Data Scraping, Model Deployment, Version Control, Experimental Design, Research Ethics