

# Arnab Bhowmik

Bronx, NY | 929-452-9190 | arnab.bhowmik@stonybrook.edu | LinkedIn

## EDUCATION

### Stony Brook University

Dec. 2026

*Bachelor of Science with Honors in Computer Science*

*GPA: 3.83*

**Relevant Coursework:** Software Development, Software Engineering, Theory of Computation: Honors, Analysis of Algorithms: Honors, Data Structures, Object-Oriented Programming, Systems Fundamentals, Programming Abstractions

## EXPERIENCE

### Compute Platform Engineering Intern

May 2025 – Aug. 2025

*GlaxoSmithKline plc*

*Seattle, WA*

- Developed an interactive **Python CLI** that uses workload diagnosis to auto-select optimal HPC environments across **Slurm and Google Batch** and optimize resource specifications when applicable, with two submission modes (automatic job script generation/submission and direct environment access), **reducing compute costs by ~10%**.
- Containerized and deployed the CLI using both **Docker and Aptainer** for cross-platform compatibility on Windows, Linux, and Unix systems, with planned rollout to **3,000+** computational scientists company-wide.
- Built proof of concept demonstrating architectural optimizations for AI/ML team's prototype agentic system's tool orchestration layer, achieving **~35% reduction in context usage**.

### Teaching Assistant

Jan. 2025 – Dec. 2025

*Stony Brook University*

*Stony Brook, NY*

- Lead recitations, review sessions, and office hours for **250+** students across Programming Abstractions (CSE 216) and Software Development (CSE 316).
- Help revise course materials, grade assignments/exams, and proctor exams to ensure smooth course operations.

### Student Software Developer

Sep. 2024 – Present

*Stony Brook University Vertically Integrated Projects (VIP) Program*

*Stony Brook, NY*

- Led the HealthByte subteam and its development, delegating tasks, creating onboarding resources, and organizing meetings.
- Developed prototype patient-facing **iOS** and clinician-facing **full-stack web** applications for monitoring post-surgery recovery using Apple Health data and custom forms, with a centralized database and authentication across both platforms.
- Develop **Regio Vinco**, an interactive web-based geography educational game helping elementary and middle school students better understand world geography, iterating on versions tested with **150+** students at partnering schools.

### Full Stack Developer

Jul. 2024 – May 2025

*QuattronKids*

*Remote*

- Led full-stack development of **PenguinLearn**, a **RESTful educational platform**, using Next.js, React, Supabase, and Prisma ORM, enabling migration from third-party hosting and **reducing overall operational costs by ~20%**.
- Implemented an on-site **real-time messaging system** for direct communication between parents and teachers, integrated **Stripe payment processing**, and automated class meeting scheduling via the **Zoom API**.
- Built test suites with **Jest and Playwright** and set up a **CI/CD pipeline**, ensuring reliability and streamlined deployments.

## PROJECTS

**TA Tools** | *Python, Flask, Beautiful Soup, Selenium WebDriver, SQLite, JavaScript*

Jul. 2024 – Aug. 2024

- Developed a full-stack web application using Flask, Jinja, and SQLite to **automate logistics tasks** for teaching assistants at a tutoring center, improving task efficiency by approximately **200%** for active users.

**Real Estate Document Classifier** | *Python, PHP, LangGraph, WordPress, Pinecone, AWS*

Aug. 2025 – Oct. 2025

- Developed an **AI classification system** for a startup's deal-closing platform using **LangGraph** workflows and **Pinecone vector search** to automatically organize documents, emails, and attachments for streamlined document management and communication.
- Managed backend infrastructure using **Terraform** on AWS EC2, refining data ingestion pipelines and CI/CD workflows.

**NutriProof** | *Python, Flask, JavaScript, OpenAI API (GPT), Wolfram Alpha API*

Mar. 2025

- Built a Chrome extension to analyze user-selected text about health and nutrition using a GPT model fine-tuned on self-labeled data, parsing claims to generate Wolfram Alpha queries and re-integrating verified results for more accurate fact-checking.

**Seawolf Accessibility** | *Next.js, FastAPI, Python, C, scikit-learn, NumPy, Google Maps API*

Feb. 2025 – Present

- Develop an interactive campus navigation web app to recommend and visualize optimal accessible routes in real time.
- Build a **custom OpenStreetMap parser in C** to extract and preprocess map data for **Dijkstra's algorithm**, mapping building entrances/exits to support indoor traversal and using **KNN** to suggest alternative routes.
- Enhance the routing cost function by **performing linear regression** on aggregated cost data with **scikit-learn and NumPy**.

## SKILLS

**Languages:** Java, Python, SQL, Bash, C, OCaml, JavaScript, PHP, Swift

**Frameworks:** NumPy, pandas, React, Vue, LangChain, PyTorch, scikit-learn, Next.js, Express.js, Node.js, FastAPI

**Tools:** MongoDB, Pinecone, PostgreSQL, MySQL, SQLite, Git, Docker, GitHub Actions, Ansible, Terraform, Jira, Google Cloud Platform (GCP), Amazon Web Services (AWS), Model Context Protocol (MCP)

**Concepts:** RESTful APIs, Agile Development, Machine Learning, Natural Language Processing (NLP), Linux, LLMs