

Arnab Bhowmik

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EDUCATION

Stony Brook University

Bachelor of Science with Honors in Computer Science

May 2027

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, Machine Learning

EXPERIENCE

Compute Platform Engineering Intern

May 2025 – Aug. 2025

Seattle, WA

GlaxoSmithKline plc

- 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 **Apptainer** 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, NY

Stony Brook University

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

Student Software Developer

Sep. 2024 – Present

Stony Brook, NY

Stony Brook University Vertically Integrated Projects (VIP) Program

- 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.
- Developing **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

Remote

QuattronKids

- 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, BeautifulSoup, 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.

Prediction Market Maker Bot | Python, Redis, PM2, AWS EC2

Sep. 2025 – Present

- Designed and deployed a **market-making system** for prediction markets in collaboration with one teammate, actively trading on **Kalshi** and under development for **Polymarket** (US exchange currently in closed beta).
- Implemented automated quoting, inventory management, and risk controls to continuously provide liquidity across markets, processing **184,000+ trades** and **9.7M+ contracts** with over **\$4.8M** in notional volume.
- Achieved profitability at scale on live Kalshi markets, averaging a profit of **\$0.00148 per contract** and a **12.2 Sharpe ratio**.
- Built a resilient trading system using **Redis** for shared state, **PM2** for process supervision, and containerized **AWS EC2 deployments**, with **email alerts** for hourly stats and system health.

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

Feb. 2025 – March 2025

- Developed an interactive campus navigation web app to recommend and visualize optimal accessible routes in real time.
- Built 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.
- Enhanced the routing cost function by **training a linear regression model** 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: PostgreSQL, MySQL, SQLite, MongoDB, Redis, Pinecone, Git, Docker, GitHub Actions, Ansible, Terraform, PM2, Jira, Slurm, Google Cloud Platform (GCP), Amazon Web Services (AWS)

Concepts: Distributed Systems, RESTful APIs, Agile Development, Machine Learning, Natural Language Processing (NLP), High Performance Computing (HPC), Linux, Unix, LLMs, Model Context Protocol (MCP)