

Arnab Bhowmik

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EDUCATION

Stony Brook University

Stony Brook, NY

Bachelor of Science with Honors in Computer Science, GPA: 3.79

Aug. 2023 – May 2027 (expected)

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

SKILLS

Languages/Databases: Java, Python, SQL (PostgreSQL, SQLite), MongoDB, Pinecone, Bash, C, OCaml, JavaScript, PHP, Swift

Frameworks/Runtimes: Next.js, Express.js, Node.js, FastAPI, Playwright, Flask, Tailwind CSS

Libraries: NumPy, scikit-learn, pandas, BeautifulSoup, Selenium, React, jQuery, pytest, Jest

Developer/DevOps Tools: Git, Docker, GitHub Actions, Ansible, Terraform, Jira, Slurm, Amazon Web Services (AWS), Google Cloud Platform (GCP), Supabase, Visual Studio Code, IntelliJ, Prisma ORM

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 and optimize resource specifications when applicable, with two submission modes (automatic job script generation/submission and direct environment access), reducing compute costs by ~7%.
- 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 consumption while improving performance.

Teaching Assistant

Jan. 2025 – Dec. 2025

Stony Brook University

Stony Brook, NY

- Programming Abstractions (CSE 216): Led weekly recitations, exam review sessions, and office hours for a class of **100+** students, covering functional programming, object-orientation, type systems, memory management, program and data abstractions, parameter passing, modularity, version control, and parallel programming.
- Software Development (CSE 316): Incoming teaching assistant for fall 2025.
- 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

- Develop a mobile app to help SBU clinicians monitor patients' post-surgery recovery progress by combining Apple Health data and custom forms to analyze their health via the HealthKit and ResearchKit frameworks.
- Lead the HealthByte subteam, creating resources for onboarding new team members, delegating tasks, and organizing meetings.
- Develop a full-stack Next.js web application for clinicians to interact with patient data gathered via the mobile app, with centralized authentication and database management for both applications.

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 operational costs by ~**20%**.
- Implemented a real-time messaging system within the platform for direct communication between parents and teachers.
- Built test suites with Jest and Playwright and set up a CI/CD pipeline, ensuring reliability and streamlined deployments.

ACTIVITIES

Undergraduate Researcher | OCaml, Dune

Dec. 2024 – Present

Stony Brook University

Stony Brook, NY

- Investigate and develop foundational ML/NLP tools in OCaml to address ecosystem gaps in tokenization, text processing, and statistical text analysis.

PROJECTS

TA Tools | Python, Flask, BeautifulSoup, 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 previous workplace, improving task efficiency by approximately **200%** for those who used it.

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 with similar accessibility characteristics.
- Enhance the route cost function using scikit-learn and NumPy to perform linear regression on aggregated cost data based on stair penalties and slope gradients computed using Google Maps Elevation API data.

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

Aug. 2025 – Present

- Develop 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.
- Manage backend infrastructure using Terraform on AWS EC2, refining data ingestion pipelines and modifying CI/CD workflows.