

Samuel Mucyo

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EDUCATION

Harvard University, Cambridge, MA

Graduation Date: May 2025

Bachelor of Arts in Computer Science

Relevant Courses: Data Structures & Algorithms, Machine Learning, High-Performance Computing, Database Systems, Systems Programming & Machine Organization, Systems Development, Data Science

SKILLS

- **Backend Development:** Python, Java, SQL, AWS, CI/CD (GitHub Actions), Docker, Bash
- **Web Development:** Flask, React, JavaScript, HTML, CSS
- **Development Tools:** Git, Linux/Unix environments, CI/CD (GitHub Actions), Bash
- **HPC & Systems Programming:** C, C++, POSIX threads, OpenMP, MPI, GDB, Valgrind

EXPERIENCE

Amazon

Seattle, WA

Software Development Engineer Intern

May 2024 - Aug 2024

- Designed Java/Spring MVC A/B testing framework automating backend workflows, reducing manual setup time
- Optimized API integration for A/B pipeline, reducing unnecessary calls by 20% and improving statistical significance of test results

Software Development Engineer Intern

May 2023 - Aug 2023

- Built REST APIs for fraud detection (Python/AWS CDK), resolving alerts 24x faster (48hr → 2hr)
- Deployed serverless backend (Lambda/DynamoDB/EventBridge) handling over 10K+ queries daily

Software Development Engineer Intern, AWS Redshift

Jun 2022 - Aug 2022

- Architected serverless data lake (Python/S3/Glue) to reduce test analysis time by 50%
- Integrated data pipelines with internal visualization tools, enabling fast detection of anomalies

Harvard University

Teaching Fellow, CS2050 and CS50

Fall 2022, Fall 2023, Spring 2025

- Conduct code reviews for over 50 student projects and weekly problem sets through grading, providing feedback on code quality, memory management, and algorithm efficiency
- Mentor students 6 hours/week, focusing on debugging issues in C, C++, Python, and JavaScript
- Lead weekly 2-hour labs, covering topics in web development (CS50) and parallel programming (CS2050)

PROJECTS

Optimized Column-Store Database System

Individual Project: Data Systems

Fall 2024

- Designed and developed a high-performance columnar database engine supporting select-project-join queries storage optimizations, including B-trees for indexing and memory-mapped files for persistence
- Enhanced query execution and concurrency by implementing multi-threaded scan operators, resulting in a top 3 placement in class benchmarks for index operations and skewed data performance
- Containerized the codebase with Docker to simplify development, testing, and deployment workflows, improving maintainability and reproducibility

Astrolibrary

Group Project: Systems Development for Computational Science

Fall 2023

- Delivered a Python library for astronomical spectral analysis by collaboratively designing API contracts, ensuring alignment with project requirements
- Developed and tested core functionality, supplemented with a comprehensive test suite using *pytest* for unit and integration tests and documentation using *Sphinx*, for maintainability and ease of use
- Automated CI/CD pipeline for seamless builds, testing, and deployment with GitHub Actions