Samuel Mucyo

sammucyo@college.harvard.edu; **web:** sam-mucyo.github.io

EDUCATION

Harvard University, Cambridge, MA — Graduation Date: May 2025

Bachelor of Arts in Computer Science

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

Teaching Fellow, Introduction to Computer Science (CS50)

Harvard University — Fall 2022 and Fall 2023

- Conducted detailed code reviews for over 40 student projects and weekly problem sets through grading, providing feedback on code quality, memory management, and algorithm efficiency
- Mentored students 6 hours/week, focusing on debugging issues in C, Python, and JavaScript
- Led weekly 2-hour hands-on lab sessions, covering topics such as introduction to data structures & algorithms in C, and web development with Flask, HTML, CSS, and JavaScript

SKILLS

- **Backend Development:** Python, Java, SQL, AWS, CI/CD (GitHub Actions), Docker, Bash
- **Web Development:** JavaScript, React, Flask, HTML, CSS

EXPERIENCE

Amazon — *Seattle, WA*

Software Development Engineer Intern at Amazon.com — May 2024 - August 2024

- Created a reusable A/B testing framework for dynamic profile badges using Java/Spring MVC, reducing similar A/B experiment deployment time from weeks to days
- Improved API usage and accuracy by identifying and resolving misuse of the internal A/B API, which caused excessive triggers and signal noise; Conducted a statistical analysis to support the redesign

Software Development Engineer Intern at Amazon.com — May 2023 - August 2023

- Architected APIs for a rule-based risk monitoring and alarming system to reduce fraudulent activity detection time by working collaboratively with software engineers, data engineers, and investigators
- Developed a new Python-based backend with AWS CDK, enabling rapid and consistent deployments; leveraged AWS Lambda and DynamoDB for scalability and resource utilization

Software Development Engineer Intern at AWS – Redshift — June 2022 - August 2022

- Designed a serverless data lake using Python, AWS S3, and Glue to enhance bottleneck detection in Redshift infrastructure testing
- Automated data pipeline integration with internal visualization tool to provide detailed insights, enabling fast, data-driven decisions

PROJECTS

Optimized Column-Store Database System

Individual Project: Data Systems — Fall 2024

- Developed a high-performance columnar database engine supporting select-project-join queries with optimized storage techniques, including B-trees for indexing and memory-mapped files for persistence
- Optimized query execution and concurrency by implementing multi-threaded scan operators, achieving a top 3 placement in class benchmarks for index operation and skewed data handling

Astrolibrary

Group Project: Systems Development for Computational Science — Fall 2023

- Delivered a Python library for astronomical spectral analysis. Collaboratively designed 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.