Samuel Mucyo

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EDUCATION

Harvard University, Cambridge, MA **Graduation Date:** May 2025
Concentration: Computer Science - Honors Track (GPA: 3.68/4.0**)**
Relevant Coursework: Data Structures & Algorithms; Systems Development; High Performance Computing (HPC); Systems Programming & Machine Organization; Data Systems; Data Science I; Machine Learning

SKILLS

Programming Languages: Python, C, C++, Java, Bash, SQL, R, OCaml, JavaScript
Tools: Cloud Computing (AWS), Spring Framework, Flask, React, Pandas, Numpy, TensorFlow, Git

EXPERIENCE

Amazon Seattle, WA
Software Development Engineer Intern at Amazon.com *05/2024 – 08/2024*

- 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 *05/2023 – 08/2023*

- 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 *06/2022 – 08/2022*

- 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

Harvard University Cambridge, MA
Teaching Fellow, Introduction to Computer Science (CS50) *08/2022 – 12/2023*

- Conducted detailed code reviews for over 40 student projects and weekly problem sets through grading, providing feedback on code quality, efficiency, and best practices
- Mentored students during 6 weekly office hours, focusing on debugging issues across multiple programming languages: C, Python, and JavaScript

PERSONAL & CLASS PROJECTS

Optimized Column-Store Database System Class Project, Fall 2024

- Engineered a columnar database engine supporting intermediate query plans (select-project-join) 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 and scan sharing, achieving a top 3 placement in class benchmarks for index operation and skewed data handling

COVID-19 Attendance Tracking System for Local Church Personal Project, Summer 2021

- Developed a contactless attendance tracking system to support safe reopening of local church in Kigali
- Built a Flask web application with facial recognition, boosting attendance recording time significantly
- Implemented privacy-conscious data handling by storing facial encodings instead of raw images