

BRIDA ESAMBU

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EDUCATION

M.S. Computer Science, The University of Oklahoma

Expected May 2027

B.S. Computer Science & B.A. Mathematics, The University of Oklahoma

May 2026

- GPA: 3.56 | Data Science & Analytics Certificate | Minors: Marketing, Entrepreneurship
- Coursework: Data Structures, Algorithm Analysis, Computer Architecture, Parallel & Distributed Network Programming, Data Networks, Database Management Systems, Computer Security, Machine Learning, Abstract Algebra

EXPERIENCE

Software Engineer Intern II, Silicon One (Embedded / Network Systems)

Research Triangle Park, NC

Cisco Systems, Inc.

Jun 2026 – Aug 2026

- Built a C++17 single-pass engine on Linux that indexes 284K events and 25K hardware-object lifecycles from a 54.8 MiB network-chip trace in 1.24 s; cut peak memory 55% (414 to 184 MiB) using `mmap`, string interning, and page release.
- Cut lifecycle reconstruction from 1.4 s to 16 ms (86x) by replacing an $O(N \cdot K)$ rescan with an $O(N + K \log K)$ index.
- Fixed an identifier-reuse bug by mapping IDs to birth-ordered vectors and binary-searching byte offsets, binding each reference to its exact live instance.
- Delivered the tool end to end (C++17, FastAPI, React, TypeScript) so engineers can isolate and replay a failing object's events; made workers crash-safe with POSIX locks, atomic writes, and idempotency keys.

Software Development Intern

Norman, OK

Ronnie K. Irani Center for the Creation of Economic Wealth

Jan 2025 – May 2025

- Architected a cross-platform Flutter app for an emergency-response startup on a team of 7 interns; built Firebase auth with email, Google OAuth, and biometric sign-in, and designed the full UI in Figma.

IT Support Technician

Norman, OK

OU Information Technology, Learning Spaces

Aug 2023 – May 2026

- Supported 150+ classrooms and 20 labs on a team that raised network uptime 20% and cut ticket resolution time 41%.
- Started training new technicians on my own initiative; management made it standard for every incoming cohort.

Undergraduate Research Fellow

Norman, OK

OU Gallogly College of Engineering

Jan 2025 – Jul 2025

- Won a \$3,000 fellowship; built an R pipeline over 3,600+ student records using regression, chi-square, Kruskal-Wallis, and Monte Carlo tests to measure math placement's effect on retention. Presented at ASEE 2026.

PROJECTS

Leka: Limit Order Book & Matching Engine | C++20, CMake, Linux, sanitizers

github.com/EBOD13/leka

- Built a C++20 price-time-priority limit order book and matching engine; replaced `std::map` with a tick-indexed array + bitset and wrote an open-addressed hash table for $O(1)$ best price and $O(1)$ cancel, cutting per-event latency 2.1x.
- Built a lock-free SPSC queue and a Nasdaq ICH 5.0 decoder replaying real sessions; 7 test suites clean under ASan/UBSan/TSan.

Fortuna: Personal Finance App | React Native, FastAPI, PostgreSQL, Redis

github.com/EBOD13/fortuna-showcase

- Built a React Native (iOS & Android) app with real-time WebSocket chat, speech-to-text, biometric auth, and OAuth.
- Built a FastAPI + PostgreSQL backend (29 tables) with JWT/MFA auth, row-level security, Plaid, and Celery/Redis jobs.

Latency Lab: C++ Systems Course | C++20, TypeScript, Next.js, Docker, Judge0

lab.danielesambu.com

- Authored a 13-module C++ course (memory models through lock-free queues) with 3 exams and a sandboxed, self-hosted Judge0 backend for in-browser compile-run-test.

Serendipity, HackMIT '25 | TypeScript, Claude, Google Places API

github.com/EBOD13/hackmit

- Built a real-time AR app for MentraOS smart glasses using GPS and weather data, with a voice UI built for low connectivity.

TECHNICAL SKILLS

- **Languages:** C++ (17/20), C, Python, Java, JavaScript, TypeScript, SQL, R, Bash, Dart, Verilog
- **Systems:** Linux, POSIX, multithreading, lock-free data structures, memory management, `mmap`, TCP/IP
- **Backend & Web:** FastAPI, Flask, Django, Node.js, Express, React, React Native, Next.js, Flutter, REST, WebSocket
- **Databases:** PostgreSQL, MySQL, MongoDB, Redis, Supabase, Firebase
- **Cloud & Tools:** AWS, GCP, Docker, Kubernetes, CI/CD, Git, CMake, GDB, Valgrind, ASan/TSan
- **Data & ML:** NumPy, PyTorch, TensorFlow, R (data.table), regression, hypothesis testing, stochastic simulation

CERTIFICATIONS & LEADERSHIP

- CompTIA Security+ (Aug 2024) | Google Cybersecurity (Jul 2024) | IBM Full Stack Software Developer (Jul 2024)
- President, Out in STEM (oSTEM) at OU | Microsoft TEALS Volunteer (CS teaching) | Fluent in English and French