

Carlos Mbendera

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Education

University of Kansas, Bachelor of Science in Computer Science

Expected May 2026

GPA: 3.87/4.0

Relevant Coursework: Software Engineering, Software Modeling and Analysis, Theory of Computation, Embedded Systems

University of Leeds, Semester Abroad Program in Great Britain

Aug 2024 - Jan 2025

Relevant Coursework: Operating Systems, Data Structures & Algorithms, User Interfaces, Computer Graphics

Skills

Programming Languages: Swift, Python, C++

Technologies & Tools: Spatial Audio, SwiftUI, UIKit, CoreML, Metal, OpenGL, Streamlit, Flask, XCTesting, Swift Testing

Relevant Experience

University of Kansas — *Undergraduate Research Assistant: Mobile App & AI Developer*

June 2023 - Present

- Developed native iOS, Android, and Web applications for human-AI interaction research using Swift, Kotlin, and Streamlit.
- Implemented a Flask backend with Firebase Firestore and integrated an AI chatbot using Python.
- Customized open-source LLMs via OLLAMA, improving the quality and engagement of AI chatbot interactions in user studies.
- Led beta testing and quality assurance, ensuring app stability and readiness for public release.

Apple Inc. — *Vision Products Group - Real Time Intern*

May 2025 - Aug 2025

- Developed an internal Swift framework to automate Spatial Audio testing by porting and expanding a legacy Python system.
- Cut integration time by 96% (2 hours to 5 minutes) and reduced execution time with a modular Git driven CI/CD pipeline.
- Enabled engineers to write and deploy test cases remotely via Git commits, with the flexibility to run subsets locally via Xcode.
- Drove adoption by presenting to leadership and cross functional teams, while contributing new algorithms to adjacent projects.

Apple Inc. — *Vision Products Group - Technology Investigation Intern*

May 2024 - Aug 2024

- Developed prototype visionOS audio experiences with internal Audio Units, SPIs, and tools for custom spatial audio rendering.
- Collaborated cross-functionally to explore and define experience specifications and trade-offs.
- Delivered interactive demos to leadership and the organization, driving alignment on key technical decisions.

Specify Collections Consortium — *Quality Assurance & Software Developer*

Mar 2023 - Jan 2024

- Designed and executed QA strategies, bug fixes, and code reviews for Specify 7 biodiversity data system.
- Streamlined development workflows through cross-functional team collaboration, reducing turnaround time.
- Resolved high-priority issues, increasing reliability and customer satisfaction by 34%.

KU Research Center for Cyber Social Dynamics — *Software Engineer*

Feb 2023 - Oct 2023

- Developed a data query tool using Python, Pandas and Streamlit, making it easier for faculty to manage legacy data.
- Converted user requirements into a tangible software solution, that allows users to perform complex data queries and analysis.
- Created a web based database alternative for spreadsheet management, accelerating data access by 60%, boosting productivity.

Projects

Technical Writer — Medium & HashNode

Oct 2022 - Present

medium.com/@carlosmbe & carlosmbe.hashnode.dev

- Published software engineering tutorials with a focus on Swift, the Apple ecosystem, and emerging technologies.
- Wrote tutorials on Computer Vision, LLMs, App Development, Computer Graphics, Speech ML, and Audio Engineering.
- Reached 15,000+ views across articles, establishing a readership in the developer community.

CheckYoSelf — github.com/Gage-Weaver/CheckYoSelf

Mar 2025

- Developed a web and iOS application using Swift and JavaScript designed to help buyers and sellers verify item authenticity.
- Integrated Apple's Object Capture to generate 3D models and verified them by using secure Smart Contracts and Blockchain.
- Won 2nd Place, Best Hack Award at the Midwest Block-a-Thon.

MyMacLLAMA — github.com/carlosmbe/MyMacLLAMA

Apr 2024

- Built a macOS menu bar app for easy interaction with local LLMs via Ollama, removing the need for terminal-based workflows.
- Added model switching, streaming responses, and conversation history in a lightweight Swift + AppKit interface.
- Published a Medium article documenting the development, sharing expertise in macOS app design and AI integration.

Rhythm Snap — github.com/carlosmbe/Rhythm-Snap

Apr 2023

- Built a SwiftUI rhythm training app using Apple's Vision framework and the iPad's Camera for real-time feedback.
- Integrated BPM tracking, hand-gesture recognition, and a dynamic UI with waveform visualization.
- Selected as 1 of 350 worldwide winners for the Apple WWDC23 Swift Student Challenge.