

Lucas Sta Maria

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EDUCATION

Northeastern University
Bachelor of Science in Computer Science and Mathematics

Boston, MA
May 2025

EXPERIENCE

Amazon September 2025 – Present
Software Development Engineer Austin, TX

- Upgraded internal **Swift** build system to accommodate Xcode 26 and dependency updates.
- Identified and resolved crashes and memory leaks for the **Amazon States Language** runtime in **Swift**.
- Improved metrics, logging, and monitoring for low-connectivity offline mode for the **Amazon Flex** app.
- Created developer tools to support **Kotlin Multiplatform** and **Swift** interop, integrated into the internal build system.
- Developed cross-platform data flows for user and session objects in **Kotlin**, improving home screen rendering performance.
- Managed CI/CD release pipelines for app release cycles, and diagnosed and resolved outage issues during on-call rotations.

Amazon May 2024 – August 2024
Software Development Engineer Intern Seattle, WA

- Implemented a dynamic newsfeed widget for the new home screen on the **Amazon Flex** app with **SwiftUI**.
- Improved the **Swift** runtime of **Amazon States Language** (ASL) that powers significant architecture of the app.

Amazon May 2023 – August 2023
Software Development Engineer Intern Seattle, WA

- Architected and introduced five new passes to an internal compiler in **Java** to transform between two critical Alexa developer configuration languages, helping backfill **500+** Alexa service configurations and improving Alexa developer velocity.
- Designed a new intermediate representation (IR) to support metadata labels, external schema files, and composed attributes.
- Refactored existing architecture of the compiler to support multiple stages of different IRs by using the visitor pattern.
- Wrote a code generation pass for the compiler that recursively traversed the IR to generate its corresponding configuration.

TEACHING

Northeastern University – Logic & Computation January 2025 – May 2025
Teaching Assistant Boston, MA

- Added language functionality to **Logical Student Language** in **Racket**, enabling students to write property-based tests.
- Taught logic, dependent typing, polymorphism, concurrency, and theorem proving through specification and verification.

Northeastern University – CS I August 2024 – December 2024
Teaching Assistant – Autograding Team Lead Boston, MA

- Lead the design and development of an assignment autograding system and domain-specific autograder specification language in **Racket** serving **2500+** submissions per week, integrated with **AWS**.
- Sandboxed submissions in **Docker** and added functionality for evaluating the robustness of student functions and tests.

Northeastern University – Programming Languages January 2023 – May 2024
Head Teaching Assistant Boston, MA

- Organized course logistics and created new CLI tool for students in **Racket** to manage and upload assignments.
- Taught parsing, recursion, fixed-point combinators, lambda calculus, mutation, lazy evaluation, type systems, and macros.

PROJECTS

x64 Compiler, *Functional Programming Language* January 2023 – April 2023

- Implemented a functional programming language compiler in **OCaml** targeting **x64 assembly** with a **C runtime**.
- Added bidirectional type-checking with **Racket** and **miniKanren**, along with garbage collection and various optimizations.

UFDS Training, *Competitive Programming Training Platform* June 2021 – June 2024

- Scaled the platform with **Firestore** to help **1000+ active users** achieve top placements in competitions (**IOI**, **APIO**, **INOI**).
- Developed platform with **React.js** and **Rust**, containerizing jobs with **IOI Isolate** for user-submitted code evaluation.

SKILLS

Programming Languages: Java, Racket, OCaml, Python, Swift, Rust, Kotlin, JavaScript, C++

Tools & Technologies: Linux (NixOS, Arch), Emacs, Git, Bash, AWS, PostgreSQL, Redis, SQLite, Docker