Lucas Sta Maria

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EDUCATION

Northeastern University — *Boston, MA*
Bachelor of Science in Computer Science and Mathematics — *May 2025*

EXPERIENCE

Amazon — September 2025 – Present
Software Development Engineer — *Austin, TX*
- *Amazon Flex* Platform Team.

Amazon — May 2024 – August 2024
Software Development Engineer Intern — *Seattle, WA*
- Implemented a dynamic newsfeed widget for delivery drivers 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 **Logic 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 **2000+** submissions per week.
- Sandboxed submission in **Docker** and added functionality for evaluating the robustness of student functions and tests.
- Improved manual grading velocity of images produced by code through rendering and uploading images to an **S3** bucket.
- Integrated LLM feedback for minimally critiquing student code, saving costs by generating the feedback on-demand.

Northeastern University – Programming Languages — January 2023 – May 2024
Head Teaching Assistant — *Boston, MA*
- Created new CLI tool for students in **Racket** to manage and upload their assignments to the handins server.
- Organized course logistics, delegating tasks to other teaching assistants and performing metagrading.
- Taught parsing, recursion, fixed-point combinators, lambda calculus, mutation, lazy evaluation, type systems, and macros.

PROJECTS

x64 Compiler — January 2023 – April 2023
Functional Programming Language
- 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 — June 2021 – June 2024
Competitive Programming Training Platform
- Scaled the platform with **Firebase** 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, Python, Rust, JavaScript, OCaml, C++, SQL
Tools & Technologies: Linux (NixOS, Arch), Git, Bash, AWS (Lambda, S3), PostgreSQL, Redis, SQLite, Docker, GitHub Actions