Luiz Mugnaini

+55 (84) 99466-2662 | luizmugnaini@gmail.com | linkedin.com/in/luizmug | github.com/luizmugnaini

Experience

Software Development Engineer (SDE) February 2025 - Present
Amazon *São Paulo, Brazil*

- Developed from the ground up a system for processing invoice updates from the Indian government with a bandwidth of 1 million updates per day
- Handled the implementation of the new internal authentication security measures based on transitive tokens for all of the services owned by our team
- Restructured the testing framework for the website that is the store-front of all of our services
- Worked on live operations with 24h disponibility for solving problems affecting our services. Got in direct touch with both clients and our third-party suppliers. This practice is also called on-call at Amazon
- Worked cross-teams, either on site teams or remotely around the globe

Fullstack Python Developer June 2023 - January 2024
Startup *São Paulo, Brazil*

- Developed a REST API using FastAPI and Redis to store data from users
- Developed a full-stack website using FastAPI, Jinja, TailwindCSS, HTMX, Redis, Docker, Google Cloud
- Explored solutions for building subscription-based courses

Education

University of São Paulo São Paulo, Brazil
Master's in Computer Science (GPA -/-) *Aug. 2024 - Present*

- Research in computer graphics and differential geometry.
- Working on geometry processing techniques using discrete differential geometry.

University of São Paulo São Paulo, Brazil
B.S in Molecular Sciences (GPA 9.2/10) *Jul. 2020 - Aug. 2024*

- Specialized in computer science and mathematics.
- Research in discrete differential geometry in the context of computer graphics (Jan. 2024 - Jun. 2024).
- Research in simplicial homotopy theory (Aug. 2022 - Dec. 2023).
- Relevant courses: Algorithms & Data Structures, Computer Graphics, Algebraic Topology, Algebra.

Projects

presheaf | *C++, C, Lua, Windows, Linux* Oct. 2023 - Present

- My core C++20 library, used in all of my C++ projects as a total substitute to the STL.
- It's written from scratch, only depends on a few LibC and OS headers.
- Allocators, core algorithms, data structures, and thin wrappers around OS-specific functionality.
- This project is public and can be found in this repository.

Yet unnamed game | *C++, C, Vulkan, GLSL, Lua, Windows* Oct. 2023 - Present

- Indie game written in my spare time.
- Written from scratch in C++20 with a minimal set of dependencies. Uses Vulkan as the rendering backend.
- 2D pixel art based, text rendering and hot reloading. Lacks gameplay - which is what I'm working now.
- Private source, but can be accessed via this link that sends you to a shared directory in OneDrive.

mina | *C++, C, GLFW, Vulkan, GLSL, Lua* Apr. 2024 - Present

- Game Boy emulator with C++20.
- Exploring low-level hardware emulation, written in C++20 with a minimal set of dependencies. Its current rendering backend is Vulkan, but I want to add other backends for better compatibility.
- Currently paused as I'm dedicating time to my game. Still private, but can be accessed via this link.

chirp | *Rust, Emulation, Interpreters* Dec. 2022 - Dec. 2022

- Emulator for the classic CHIP-8 virtual-machine.
- My first exploration into techniques for emulating hardware and building interpreters. Uses SDL2 as a rendering backend.
- Public source, can be found in this repository.

radiant | *Rust* Nov. 2021 - Nov. 2023

- A simple CPU-based ray tracer.
- My first step into graphics programming, uses SDL2 as a rendering backend.
- Public source, can be found in this repository.

Technical Skills

Programming languages: C++, C, Rust, Python, Lua, Java, Typescript, Javascript.
Development Tools: Visual Studio, GNU GDB, CMake, Git, Windows, Linux, Docker.
Libraries: C++20 STL, C11 standard lib., Windows native API, Linux native API, GLFW, Vulkan, OpenGL, SDL2.