

HERNANI SAMUEL DINIZ

Systems Programmer · Rust

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PROFILE

Systems programmer building emulators, virtual machines, and language runtimes in Rust. Focused on modeling execution state with the type system to make invalid states unrepresentable. Interested in ISA design, bytecode interpreters, and memory-safe systems.

TECHNICAL SKILLS

Primary language: Rust

Also familiar with: Python, C

Domains: emulation, ISA design, bytecode interpreters, memory-safe systems design

Tooling: cargo, git, no_std environments

Concepts: RISC-V RV32I ISA, Chip-8 architecture, Brainfuck IR

PROJECTS

[RISC-V RV32I Emulator](#)

Rust · In Progress

- ▶ Implementing RV32I base integer ISA with focus on machine-mode execution.
- ▶ Designed to support FreeRTOS boot (timer interrupts, CSRs, trap handling).
- ▶ State transitions (fetch → decode → execute → trap/return) encoded so illegal transitions don't compile.

[Chip-8 Interpreter](#)

Rust · Complete

- ▶ Implemented the full instruction set with focus on CPU modeling: registers, stack, PC, and opcode dispatch.
- ▶ Type-driven emulator design with explicit CPU state transitions.

[Brainfuck Interpreter](#)

Rust · Complete

- ▶ Implemented parser and IR-based interpreter.
- ▶ Introduced compiler pipeline concepts: source → IR → execution.

Currently exploring: Wasm binary interpreter (stack-machine executor, no external deps); experimental concatenative language targeting bare-metal systems via LLVM IR.

EDUCATION

B.Sc. Software Engineering — Unicesumar

Feb 2021 – Feb 2025

ADDITIONAL

Languages: Portuguese (native), English (technical)

Neurodiversity: autistic — detail-oriented, strong focus on invariants and specifications