Alisson Linhares

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ABOUT ME

I am a computer scientist with a solid background in bare metal programming, Linux, computer graphics, generative AI, hardware emulation, compilers, and game development. I have worked for several leading companies, including **IBM**, **Dell Technologies**, and **PUC-Campinas**. In addition, I have proven experience developing highly sophisticated applications, including operating system components such as drivers, schedulers, graphical interfaces, bootloaders, game engines, and firmware. I also have academic teaching experience and have led and overseen several research and development projects throughout my career. To view my full curriculum and professional background, please visit: https://alissonlinhares.com/.

EDUCATION

Master's degree, Computer Systems 2013-2015
UNICAMP - University of Campinas, Campinas, Brazil
- ✓ Thesis: Native Kit: Support for running Native Virtual Machines

Bachelor's degree, Computer Science 2007-2011
University Tirandentes, Aracaju, Sergipe
- ✓ Thesis: Neutrino OS: an original Operating System design

EXPERIENCE

Senior Engineer Dec 2022 – Apr 2025
DELL Technologies, Campinas, Brazil
- ✓ I worked in the OCTO and AIRI divisions, where I designed Retrieval-Augmented Generation (RAG) pipelines, developed multi-agent orchestrators compatible with modern LLM standards, and enabled advanced content generation using Stable Diffusion and ControlNets. Additionally, I led multiple R&D initiatives focused on implementing agentic systems and ReAct-based agents with structured output, function calling, and advanced reasoning and planning capabilities.
- ✓ **Relevant Skills:** • Leadership • Scrum • R&D • Python • Microservices • TDD • MLOps • AI • git

Undergraduate Professor Mar 2021 - Feb 2023
PUC, Campinas, Brazil
- ✓ I lectured on several subjects, including Computer Architecture, Operating Systems Theory, Introduction to Algorithms, Game Programming, Artificial Intelligence for Games, Data Structures and Algorithms, NoSQL Databases, Web Development, and Digital Systems.
- ✓ **Relevant Technologies:** • Public Speaking • Unity3D • RISC-V • VHDL • C • C++ • AMD64 • Python • NodeJS • Javascript • CSS • HTML • MongoDB • SQL • Linux

Lead Programmer / Co-founder Mar 2020 - Feb 2022
AXNTEK, Campinas, Brazil
- ✓ I was the co-founder, lead programmer, and manager. Over two years, we successfully launched three games on both Android and iOS. At AXNTEK, I had the opportunity to develop scalable cloud infrastructure using Oracle Cloud, Podman, Redis, MongoDB, Node.js, Express.js, and Nginx, as well as to create sophisticated game mechanics using C#, Python, and Unity3D.
- ✓ **Relevant Technologies:** • Leadership • Unity3D • C# • Python • Android • iOS • Linux • git

Computer Architecture Research Aug 2019 - May 2020
Idea IP, Campinas, Brazil
- ✓ I worked on optimizing a Digital Signal Processor (DSP) simulation pipeline. Moreover, I made several valuable contributions to the company, including developing an open-source tool called SCProf, which helps the engineering team profile precision across various areas of the chip during simulation. This contribution also resulted in a publication: A SystemC profiling framework to improve fixed-point hardware utilization
- ✓ **Relevant Technologies:** • R&D • Python • C • C++ • SystemC • Linux • System Profiling • HPC

Linux Software Engineer Oct 2015 - Jan 2017
IBM, Campinas, Brazil
- ✓ I worked in the Linux Technology Center, developing solutions for PowerPC servers. I had the opportunity to contribute to two projects: Migration Advisor, where I served as the main developer, providing impactful contributions to automating the migration of AMD64 SIMD instructions to AltiVec; and the Advanced Toolchain compiler stack, where I improved and optimized several internal mechanisms, including the development of SIMD helper interfaces. Additionally, I gave several lectures on the subject.

- ✓ **Relevant Technologies:** • AMD64 • Compilers • PowerPC • Linux • Java • SSE • AVX • AltiVec • Binary Translation • Instruction Mapping • C • C++ • Linux • Git • Scrum

Other Experiences (4+ years)

- ✓ Contract Undergraduate Professor, UFS/SE
- ✓ Game Developer, Lumen Games/SE
- ✓ Game Programming Researcher, LDG/SE
- ✓ Technical Electronics Education, CEFET/SE

PROJECTS

SCProf: a SystemC profiling framework to improve hardware utilization <code>

- ✓ SCProf is a SystemC profiler designed from scratch to help engineers analyze DSPs' precision utilization. I developed it as a research project for IdealP, a company specializing in DSP design. The profiler operates in real time during hardware simulation, collecting telemetry data similar to the Linux Perf app. Using this framework, the company optimized the fixed-point precision requirements of several internal DSP modules, resulting in a published paper.
- ✓ **Relevant Technologies:** • Linux • SystemC • C++ • Python • git

Native Kit: Support for running Native Virtual Machines. <code>

- ✓ NativeKit is a framework that implements a minimal POSIX interface, allowing users to recompile their Linux user-level applications to run on bare metal (without an operating system). It uses GRUB to bootload an exokernel integrated into the application's static binary, reducing system requirements and improving the performance of binary translators.
- ✓ **Relevant Technologies:** • Linux • C • C++ • Assembly • GRUB • Kernel • Drivers • Firmware • git

Neutrino OS: an original Operating System design. <code>

- ✓ Neutrino OS is a fully capable operating system developed in x86 assembly. I built everything from scratch using old 486DX manuals as references. I designed the entire software stack for this project, including the bootloader, firmware, shell, graphical interface, applications, filesystem, preemptive scheduler, memory management, event subsystem, APIs, threads, and several drivers for 2D/3D accelerated video, hard drives (PATA/SATA), CD-ROM (PATAPI), keyboard, and mouse.
- ✓ **Relevant Technologies:** • C • C++ • Assembly • Kernel • Drivers • Firmware • git

Other Projects

- ✓ Magic Ink Adventure Drawing (Game/C#/Unity3D/Android/IOS)
- ✓ Infinity Crossword (Game/C#/Unity3D/Android)
- ✓ Gems Attack (Game/C#/Unity3D/Android)
- ✓ ARMv7 Emulator (C/C++/ARMv7/Research)
- ✓ NesEMU Emulator (C/C++/Ricoh 2A03/Research)
- ✓ Oxygen Isometric Game Engine (WebGL/Javascript)

SKILLS

• Python • C# • C++ • C • Embedded C • JavaScript • TypeScript • Shell Script • SQL • MongoDB • Redis • RISC-V • ARM • AMD64 • VHDL • GCC/G++ • NASM • Bash/zsh • GDB • perf • HPC • Linux • Android • Git • NodeJS • REST API • Docker • Oracle Cloud • MLOps • DevOps • CI/CD • LLM • Generative AI • Problem Solving • Scrum • Computer Graphics • Unity3D • Dynamic Binary Translation • Hardware Emulation • KVM • Compilers • Kernel • Drivers • Virtual Machines • Firmware • AI • Full Stack Development • Game Development • Leadership • R&D

LANGUAGES

- ✓ Portuguese - Native
- ✓ English - Advanced

MORE INFO

I am a developer with more than 12 years of experience designing applications for various computer architectures and operating systems, including Android, iOS, macOS, Windows and Linux. Unlike most developers, my practical skills are not confined to a specific layer of the computing stack. I am curious, self-taught and capable of working across the entire system - from CPU design, firmware, and operating systems to compilers and higher-level software, such as VR/AR games, 3D physics simulations, responsive websites, and AI-driven applications. Given my expertise and generalist background, I am seeking a Systems Engineer position where my skills can be fully utilized and challenged.