

David Cruz

Seeking position in Computer Engineering for Summer 2025

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Education

B.S. in Computer Engineering

September 2022 - June 2026

California Polytechnic State University, San Luis Obispo

Systems Programming • Operating Systems • Architecture • Graphics Pipeline • **Software Engineering**

- Engineered a RISC-V CPU Core in **SystemVerilog** with **Vivado**
- Streamlined collaboration through structured **Git** workflows with integrated **ticket** tracking and GitHub Projects
- Implemented communication protocols (I2C, SPI, UART) on microcontrollers for hardware interfacing

Experience

Software Engineer @ JC Cobra Guard, Inc

April 2022 - May 2024

- Architected and maintained Linux-based cloud infrastructure for DNS, email and web hosting, achieving 99.9% uptime while implementing scalable solutions that reduced contracted developer time exponentially
- Developed full-stack website using Nginx, **Node.js**, **React**, Next.js, and Tailwind CSS, reducing hosting costs by over 95% (20x cheaper than agency alternatives) while ensuring WCAG compliance and **responsive design**
- Devised middleware to safeguard against automated bots and malicious activity, thwarting 99% of automated attacks while bolstering site **security** and preventing unauthorized access

FOSS Organization & Development

June 2017 - **Present**

- Engineered high-performance game engine components in **C++** / **Vulkan** with **Lua** scripting, optimizing rendering pipeline to achieve 400% better performance compared to leading alternatives
- Designed a complete RISC-V processor with 100% RV32I instruction set support, including custom assembler and emulator in **Rust**, showcasing expertise in computer architecture and systems programming
- Created multiple programming languages from scratch in **Rust** and **TypeScript**, including **compilers** and **code generation** systems, emphasizing type safety, maintainability, and simplicity
- Streamlined **GitHub** organization management with structured permission systems, standardized workflows, and mandatory code reviews, reducing bugs by 200% while enhancing **team collaboration** and code quality

Skills

Languages & Core

- **Rust**, Lua, C/C++, Java, **TypeScript**
- Compilers, Systems Programming
- Windows, **Linux**, Python
- VSCode, Vim, IntelliJ

Hardware & Architecture

- x86-64, ARM, **RISC-V**
- ISA Design, FPGA Development
- **SystemVerilog**, UVM, Icarus
- Vivado, QEMU

DevOps & Web

- Git, GitHub Actions, Docker, Figma
- Tailwind, **React**, Node.js, Solid
- Nginx, Flask, DNS, Networking
- **CI/CD**, Next.js, Express

Profile

- **First-generation** technologist with several years contributing to **open-source** projects and tech communities
- Maintain technical blog featuring project documentation and educational guides for emerging developers
- Build systems from first principles to develop deep understanding and create simplified learning resources
- Passionate about creating **developer tooling** that improves workflow efficiency and coding experience