Noah Krim

Software Engineer

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Software engineer fascinated by computer hardware and the systems built upon it.
UC Davis graduate with experience leading development on RISC-V simulator used in CS education, and independent projects in graphics pipelines and physics visualizations.

Experience

Research Software Engineer | Jun 2024 - Sep 2024 | DArchR

- Developed a Linux Kernel driver guest-to-host bridge for KVM workloads to resolve longstanding research obstacle. Enabled unprivileged programs on simulated OS guests to communicate with the gem5 simulator via MMIO accesses.
- Designed a new simulation object framework for accelerator development, automating internal event scheduling to simplify implementation for researchers.
- Modernized outdated educational materials for the 2024 gem5 Bootcamp, transforming them into widely adopted resources used across multiple institutions.

Undergraduate Researcher & TA | Sep 2022 – Jun 2024 | LupLab

- Built an educational RISC-V simulator called VRV used in coursework to enhance student understanding. Overhauled the legacy SPIM simulator by porting it to RISC-V, optimizing performance, and implementing new architectural improvements. Supports M-mode kernel segments to teach OS and device driver concepts. Reported as an effective teaching aid by most student users. Includes CLI and GUI debugging frontends, and expanding to a WASM frontend for the web.
- Completed core of rvcodec.js, a web-based tool for deconstructing RISC-V instructions, featuring real-time autocomplete suggestions to improve student learning of instruction encoding.
- Conducted extensive code reviews as a paid TA for Operating Systems and Computer Organization courses. Provided in-depth, structured feedback beyond standard grading, revealing improvement opportunities catered to each student.

Competitive Programming Contest Organizer | Jan 2023 - Present | ACPC

- Organizer and lead problem setter for ACPC, student-run competitive programming contest with a focus on encouraging closer student engagement with algorithms.

Projects

Concurrent Lineage-Store Database | 2023 | Rust, Python

- Implemented a novel transactional database design in Rust with a Python query interface. Designed record location system, durable buffer pool, and concurrency control procedure.

3D Cloth Simulation | 2022 | C++, OpenGL, SFML

- Built a physics-based cloth simulation using Verlet integration, supporting user mouse interaction and real-time physics adjustments.

AVX-Powered Mandelbrot Explorer | 2022 | x86 Assembly, C++, SFML

- Developed an interactive Mandelbrot fractal viewer with handwritten x86 assembly using AVX SIMD instructions for maximal single-threaded performance.

Other Projects

- ARM-like CPU Design and Assembler
- WebGL Deferred Renderer
- CUDA Raytracer
- Image Stitcher

Education

UC DAVIS

Earned BS in Computer Science
Sep 2022 - Sep 2024 | Davis, CA
UCD GPA: 3.94 / 4.0
Dean's Honors List for 3 Quarters

PASADENA CITY COLLEGE

Sep 2020 - Jun 2022 | Pasadena, CA
PCC GPA: 4.0 / 4.0

Accolades

INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST (ICPC)

Earned Qualification for 2023 North American Championship

Skills

PROGRAMMING

C • C++ • Python • Rust

RISC-V • x86 • ARM

Javascript • C# • Go • Haskell

LIBRARIES/TOOLS

Linux Kernel • KVM • QEMU
gem5 • Git • GDB
OpenGL • CUDA • QT
Emscripten/WASM

TOPICS OF INTEREST

- Operating Systems
- Simulators
- Teaching
- Computer Architecture
- Graphics
- Parallel Computing
- Compilers
- Debuggers