Noah Krim
Software Engineer

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Software engineer fascinated by computer hardware and the systems built upon it.
UC Davis graduate passionate about graphics pipelines, simulators, and CS education tools. Experience leading development on RISC-V simulator deployed as a teaching aid and independent projects surrounding graphics pipelines and physics visualizations.

Experience

RESEARCH SOFTWARE ENGINEER | DArchR – UC Davis Comp. Arch. Research
Jun 2024 – Sep 2024 | Davis, CA | Professor Jason Lowe-Power

- → Resolved longstanding issues affecting KVM workloads by developing a Linux Kernel driver guest-to-host bridge. Allows unprivileged programs on simulated OS guests to communicate with the gem5 simulator via MMIO accesses.
- → Developed a new simulation object framework for accelerator development. Automates the scheduling of internal events, allowing users to focus on design.
- → Aided in the development, editing, and testing of educational materials for the 2024 gem5 Bootcamp. Built key features of the bootcamp's website.

UNDERGRADUATE RESEARCHER & TA | LupLab – UC Davis CS Education Research
Sep 2022 – Jun 2024 | Davis, CA | Professor Joël Porquet-Lupine

- → Created VRV, an educational RISC-V simulator. Ported and overhauled the SPIM simulator, converting to RISC-V and implementing new design ideas to improve organization and performance. Worked independently, with professor consultation.
- → Completed ISA specification for rvcodec.js, an online tool to disassemble RISC-V to aid student understanding of instruction encoding. Developed UI features including instruction auto-complete suggestions.
- → Worked as a paid teacher's assistant, an opportunity rarely offered to undergraduates, for two classes: Operating Systems and Computer Organization. Did extensive code reviews, graded exams, led discussions, and held office hours.

Projects

VRV (VIRTUAL RISC-V) | C, C++, QT, WASM | Poster Accepted to ACM SIGCSE TS 2025
2023 – Present | https://gitlab.com/luplab/vrv | Link to Seminar Slides

- → Simulation backend assembles, links, and executes RISC-V assembly programs.
- → Configurable M-mode system file defines kernel functionality, e.g. trap handlers.
- → Execution supports both simplified std input and an MMIO TTY device interface.
- → Project maintains a CLI frontend and a QT GUI frontend with extensive debugging capabilities. Actively working on a javascript+WASM frontend to run on the web.
- → Used in UC Davis course, reported as effective teaching aid by 80% of students.

3D CLOTH SIMULATION | C++, OpenGL, SFML
2022 | https://github.com/nkrim/cloth-sim

- → Discrete cloth nodes simulated with Verlet integration and iterative resolver.
- → Supports user interaction (grabbing and tearing) with adjustable parameters that affect both the physics and aesthetics of the simulation.

AGGIE COMPETITIVE PROGRAMMING CONTEST | Codeforces, C++, Python
2022 - 2023 | https://acpc-ucd.com/

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

OTHER PROJECTS

- → WebGL Deferred Renderer, Rust L-Store Database, CUDA Raytracer, Image Stitcher

Education

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

PASADENA CITY COLLEGE
2020 - 2022 | Pasadena, CA
PCC GPA: 4.0 / 4.0

Accolades

INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST (ICPC)
Earned Qualification for 2023 North American Championship

Skills

PROGRAMMING

Proficient:
C • C++ • RISC-V • JavaScript

Experienced:
Python • x86 • ARM

Familiar:
Rust • C# • Go • Haskell

LIBRARIES/TOOLS

OpenGL • WebGL • Bison+Flex
Git • GDB • KVM • CUDA • QT
Emscripten/WASM

TOPICS OF INTEREST

OS • Simulators • Teaching
Graphics • Comp Arch
Parallelism • Compilers

References

Joël Porquet-Lupine
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UC Davis
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Jason Lowe-Power
Associate Professor
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