

Cole Johnson

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EDUCATION

University of Southern California

Bachelor of Science, Computer Science

Los Angeles, CA

August 2021-May 2025

Honors and Awards: National Merit Finalist, Presidential, University, and Tuition Exchange Scholarships

University of Edinburgh

Computer Science Exchange

Edinburgh, Scotland

Spring 2024

EXPERIENCE

Kolo (<https://kolo.ai/en>)

Los Angeles, CA

Software Engineering

June 2024 - March 2025

- Engineered and fine-tuned a custom LLM with Unsloth to power a functional AI drive-through assistant, capable of processing real-time orders and performing direct POS system integration.
- Built an end-to-end AI conversation service by integrating a LlamaIndex/PostgreSQL backend with a ReactJS front-end, delivering a seamless, user-facing platform for context-aware chat.
- Constructed robust data pipelines to crawl, clean, and store all forms of expert content in databases, enabling accurate and context-specific AI responses.

Skyguard (<https://skyguard-theta.vercel.app/>)

Los Angeles, CA

Software Engineering

January 2025 - May 2025

- Engineered data pipeline on Raspberry Pi server that synchronized and streamed camera frames with GPS data, providing real-time input required for a YOLO-v8 landmine detection model to aid first responders in demining Ukraine.
- Automated Raspberry Pi networking and boot scripts (dhcpcd, hostapd), creating a self-configuring system that eliminated manual setup and enabled rapid field deployment.

Juvo+ (<https://www.linkedin.com/company/juvoplus>)

Los Angeles, CA

Software Engineering

November 2022 - March 2023

- Developed Python solution leveraging time-series analysis to predict seasonality for Amazon products, achieving a seasonality index accuracy of 95%
- Implemented confidence scoring system integrating advertising costs, historical data length, and Out of Stock frequency, enabling Marketing and Demand planning teams to make data-driven decisions.

Error Corp (<https://www.error-corp.com>)

College Park, MD

Research Intern

May 2022 - August 2022

- Utilized the quantum toolkit QuTiP's GRAPE algorithm to optimize quantum control pulses aimed at reducing decoherence in quantum systems for quantum computing startup at University of Maryland.

PROJECTS

RV64I CPU Emulator in Rust

Spring 2025

- Engineered a full-stack RISC-V system emulator in Rust, including a CPU with virtual memory, privileged architecture, and full interrupt handling (PLIC, CLINT).
- Simulated UART and implemented the Virtio specification for paravirtualized device support.
- Developed a Supervisor-level memory management unit (MMU) with a page-based virtual memory system, handling exceptions and context switching.

Study Buddy

Fall 2024

- Built end-to-end Android application allowing USC students to form study groups, exchange resources in private/group chats, and schedule sessions via Google Calendar's API. Developed a Firebase backend (Realtime Database, Storage, Authentication) for real-time collaboration and secure user management.

Portal Game

Fall 2023

- Developed a 3D puzzle game from scratch entirely in C using SDL2. Implemented real-time rendering, custom view matrices for portal views, and a multichannel audio system. Utilized linear algebra techniques to handle dynamic camera perspectives and seamless perspective shifts.

SKILLS

C/C++, Rust, Python, Java, JavaScript, Unsloth, Flask, Firebase, MySQL, Git, Docker