

# 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>)

AI/ML Engineer

Los Angeles, CA

June 2024 - March 2025

- Increased inference speed by 2x and reduced memory usage by 40% for an AI drive-through assistant by fine-tuning a custom LLM with Unsloth for real-time orders and POS 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 over 50 GB of expert content in databases, enabling accurate and context-specific AI responses.

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

Software Engineering

Los Angeles, CA

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 cut manual setup and reduced deployment time from several minutes to under 30 seconds.

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

Software Engineering

Los Angeles, CA

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>)

Research Intern

College Park, MD

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

### Chimera (<https://github.com/cjohnson451/projectchimera>)

Fall 2025

- Created a full-stack investment analysis platform where a team of AI agents, using LangGraph, debate financial data to generate explainable, auditable investment memos.
- Built with a React/TypeScript frontend and Python/FastAPI backend, using a ChromaDB vector database for a long-term memory system and a PostgreSQL database for processing real-time market data.

### RV64I CPU Emulator in Rust (<https://github.com/cjohnson451/rv64emu>)

Spring 2025

- Engineered a full-stack RISC-V system emulator in Rust, featuring a CPU with privileged architecture and a Supervisor-level MMU for page-based virtual memory and interrupt handling.
- Implemented I/O device support by simulating a UART and building a paravirtualized device interface using the Virtio specification.

### 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