Julia Duffy
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Education

- M.S. in Computer Science with an emphasis in ECE, University of Utah — Expected Dec 2027
  - *Relevant Courses: Operating Systems*
  - *In Progress: Graduate Algorithms, Computer Architecture, High Performance Computing*
  - GPA: 4.0
- B.S. in Computer Science, University of Utah — May 2026
  - *Relevant Courses: Computer Systems, Computer Security, Computer Organization*
  - GPA: 3.73

Projects

xv6 Operating System Internals - *C, x86, QEMU, GRUB, GDB*

- Reworked parts of the xv6-64 OS as a part of CS 6460 at the University of Utah.
- Starting from a provided GRUB multiboot header, wrote the first C code in the boot process initializing a 4-level page table and writing diagnostic output to a serial line before any other kernel code ran. Emulated using QEMU.
- Built a Unix-style shell supporting job control, foreground/background processes, signal handling, I/O redirection and more.
- Added “pcreate”, a custom xv6 system call that starts a new process in a single step in place of “fork” and “exec”.

Custom Heap Allocator - *C, GDB*

- Built an mmap-based implementation of malloc, free, and init in C. Implemented an explicit free list, coalescing, splitting, alignment, and page-level memory mapping as part of CS 4400 at the University of Utah.

Programming Language Interpreter - *Racket*

- Used Racket to build a custom programming language interpreter for a custom language called “Moe”. Implemented support for parsing, evaluation, type handling, type checking, and variable binding.

Work Experience

Software Engineering Intern, Anonyome Labs — *Salt Lake City, Utah* — *May 2026 - Present*

- Working on creating web-based privacy software using React, JavaScript, and TypeScript including a password manager browser extension to be released to a subscriber base of 37,000 users.
- Building a RAG (Retrieval-Augmented Generation) based support agent to organize and interpret customer feedback data using Hugging Face, Chroma and Ollama.

Contract Software Engineer, EPA Grant, University of Utah — *Salt Lake City, Utah* — *Aug 2025 - May 2026*

- Built a school air-quality monitoring app using Tellus Sensors, Flutter, FastAPI, and the Google Cloud ecosystem, as part of a $6.4M EPA grant to monitor indoor air pollution in K-12 schools.
- Displayed live pollutant visualizations from school-installed sensors and distributed automated "action plans" to teachers when pollutant levels reached an unhealthy range.
- The app is projected to be deployed across urban and rural Utah schools and the Northern Arapaho Tribe in Wyoming in 2027.

Software Engineering Intern, Pusher LLC — *Salt Lake City, Utah* — *May 2025 - Aug 2025*

- Increased annual profits by an estimated $7,400 per year by improving the site’s shipping rate calculation system and by introducing support for international shipping using a RESTful API.

Computer Science Teaching Assistant, Kahlert School of Computing, University of Utah — *Salt Lake City, Utah* — *Jan 2025 - Present*

- Gained confidence and leadership skills through leading labs, performing one-on-one code reviews with students, and holding help hours.
- Taught students about good software practices, C#, .NET Core, Networking, Databases, and more.

Extracurriculars

Awards

- 1st Place, Best Game Award - *Redo Hackathon 2025*
- 3rd Place, Best AI-Integrated Hospital Software - *Generative AI Hackathon 2025*

USA Climbing National Team Athlete

- Competed on the IFSC World Cup Circuit. 7x National Team Member, 2x Vice National Champion.