

Alexander Lucas

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Summary

I am a computer science enthusiast with an inclination for harnessing CS theory to tackle practical challenges in a clean, efficient, and maintainable way. I'm especially interested in expanding my skills in compilers, real-time systems, and formal methods.

Skills

Proficient Languages: C, JS/HTML/CSS, Rust, OCaml, Python, Java, Haskell, Lean 4, C#, LaTeX, Typst

Platforms: Ten years using GNU/Linux including Debian and Redhat, QEMU, Google Cloud

Technologies: Buildroot, WebGL, Numpy/Pytorch/Sklearn, Matplotlib, Git, Gitlab/Github, PostgreSQL, Node, Slurm, POSIX IPC, Linux kernel subsystems

Soft Skills: Technical Writing, Software Documentation, Presentation

Experience

Embedded Software Engineer, Jr. **KBR, 01/2025-05/2025 (End of Funds)**

- Accepted regular position working with the same great team and software as in my internship.
- Developed QEMU virtual hardware devices for building/testing platform-specific applications.
- Designed and implemented protocols for inter-device communication on real-time hardware.
- Built graphical/textual interfaces (C++) for configuring test programs and device drivers.

Linux Driver Development Intern, Full-time **KBR, 05/2024-08/2024**

- Learned Linux kernel subsystems and developed device drivers for custom system-on-a-chip hardware, including GPIO/pin controllers and an AES encryption accelerator module.
- Worked with team members to develop testing and assurance methodologies including coverage profiling and input fuzzing for Linux drivers while porting Linux to our boards.
- Automated common tasks, writing scripts to handle OS installations and code restructuring.
- Presented project status and details to large, cross-functional and interdisciplinary groups.

Teaching Assistant **James Madison University, 08/2022-12/2023**

- Took questions and led review sessions in proofs, programming, tooling, and debugging software.
- Mentored students, helping them to develop the skills needed to succeed in challenging courses.

Education

B.S. Computer Science (3.8 GPA) **James Madison University, 12/2023**

- Programming Languages, Compiler Construction
- Independent Study in Constructive Logic, Symbolic Logic
- Machine Learning, Applied Algorithms & Data Structures
- Parallel and Distributed Systems, 3D Graphics

Study Abroad, London, UK **JMU at Florida State Study Center, Summer 2023**

- Rigidity Theory
- Independent Study in Computational Geometry

Academic Awards

- "President's List" **JMU, 2023**
- "Alonzo Church Award for Theory" **JMU CS Department, 2024**

Personal Projects

Aasam (on [Hackage](#)) is a Haskell implementation of the CFG-generation algorithm \mathcal{M} from Annika Aasa's paper "Precedences in specifications and implementations of programming languages".

Randall (on [Gitlab](#)) is a Discord bot to execute dice-notation for playing TTRPGs remotely. It uses a recursive descent parser/interpreter on the backend and .NET's "Discord" library up front.