Jakob Olsen

Education

University of North Carolina at Charlotte — Charlotte, NC
M.S. in Computer Science (Systems & Networks) — *Jan 2025 – May 2026*
4.0 GPA, Chancellor's List (Spring 2025)
B.S. in Computer Science (Software Engineering) — *Aug 2023 – May 2025*
4.0 GPA, Chancellor's List (Fall 2023–Spring 2025)

Experience

University of North Carolina at Charlotte — Charlotte, NC
Graduate Assistant — *Jan 2026 – Present*

- Assisting the professor with organizing course layout and materials to optimize the flow of information.
- Learning valuable teaching skills by giving lectures throughout the semester.
- Supporting students by holding office hours, mentoring students on the course subject.
- Organizing, grading, and providing valuable feedback on student submissions.

City of Hendersonville IT Department — Hendersonville, NC
Temporary IT Worker — *May 2025 – Aug 2025*

- Managed deployment of an off-site phone system for 300+ employees with minimal downtime.
- Migrated legacy software to a modern platform, strengthening network integrity.
- Led acquisition, configuration, and testing of digital signage & meeting room systems.
- Deployed Linux server OSes (Proxmox, Ubuntu) to run testing environments.

Projects

Academic Research / Master's Thesis
Project Lead — *Aug 2025 – Present*
Design of a Hybrid Matrix Multiplication Unit for a CPU

- Establishing architectural requirements for an efficient, multi-purpose matrix multiplication unit; surveying existing designs to improve upon.
- Mentoring an undergraduate researcher on CPU pipeline, core architecture fundamentals, and GPU programming and architecture.
- Creating, simulating and testing processor designs using Vivado and AMD Xilinx FPGA.

TetOS
Developer — *Aug 2025 – Present*
Minimal kernel to explore bootloading, memory layout, trap handling, and other OS concepts.

- Developing a custom kernel in C and RISC-V assembly for the QEMU `virt` platform.
- Building foundational kernel architecture to support future multitasking, hardware abstraction, and system calls.
- Learning OS fundamentals through iterative development process.

Smart Maintenance / Capstone
Scrum Master / Developer — *Jan 2025 – May 2025*
IoT predictive maintenance pipeline from Arduino sensors to AWS

- Worked under the NSA's Cooperative Research and Development Agreement to produce a fully-functional prototype.
- Engineered Arduino-based sensors to generate realistic data distributions using C.
- Developed a low-latency data pipeline that delivers sensor readings to AWS DynamoDB in < 1s.
- Organized requirements into iterative sprints; coordinated task distribution and progress across a 6-member team.

Contact & Links

Charlotte, NC
jolsen618@gmail.com
linkedin.com/in/jakob-c-olsen
github.com/jakobcolsen

Skills

- **Low-Level Programming:** C/C++, RISC-V, OpenMP, CUDA
- **Operating Systems:** Foundational OS design, Linux, Windows, Parallel computing
- **Computer Architecture:** Memory hierarchy, Computer organization, CPU design, FPGA development
- **Embedded Systems:** Arduino, Raspberry Pi, STM32, Foundational driver development
- **Other Programming:** Python, Java, JavaScript, NodeJS
- **Networking/Cloud:** AWS (DynamoDB/IoT Core), Cloudflare DNS, TCP/IP, OSI model, Networking fundamentals
- **Tooling:** Vivado, QEMU, Git, GitHub, VS Code

Coursework

- Advanced Embedded Systems
- Operating Systems & Networks
- Algorithms & Data Structures
- Computer Systems & Architecture
- Secure Programming & Pen Testing
- Software Engineering
- Software Architecture
- Artificial Intelligence
- Parallel Computing
- Calculus III; Linear Algebra
- Probability & Statistics