Carter Opperman

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Education

University of Virginia, College of Arts and Sciences | Charlottesville, VA — Aug 2022–May 2026
B.A., Computer Science, Economics – GPA: 3.85 – Computer Science GPA: 4.00

Internship Experience

Associate Software Engineer | WiseTech Global | Sydney, Australia — May 2024–Aug 2024
- Engineered solutions for 18 work items in the Business Intelligence team, including 3 critical defect patches
- Led technical design and implementation of improvements to internal processes in SQL Server change data capture, facilitating a 30x efficiency gain in enterprise data warehouse procedures
- Constructed denormalized tables to facilitate queries of aggregated data tailored to customer needs, including SQL scripts for operational data extraction, transformation and loading into an enterprise data warehouse

Work Experience

Research Assistant | University of Virginia, LESS Lab | Charlottesville, VA — Aug 2024–Present
- Develop techniques and tools for building and verifying complex, safety-critical software systems
- Lead research and development of satisfiability solvers implementing multi-armed bandit algorithms to increase efficiency in a critical decision-making heuristic, focusing on C++ optimization to ensure accurate benchmarks

Teaching Assistant | University of Virginia, Computer Science | Charlottesville, VA — Aug 2024–Present
- Enhance students' learning in Computer Systems and Organization II, and Discrete Mathematics, through 3 weekly hours of class, office hours and lab, guiding to individual understanding
- Craft and review exam questions synthesizing multiple topics to test limits of students' knowledge

Head Teaching Assistant | University of Virginia, Computer Science | Charlottesville, VA — Mar 2024–Present
- Coordinate between professor, 30+ TA's, and 600+ students to lead delivery of Intro to Programming content
- Direct at least 1 lab per week, reinforcing learning with live Python coding demonstrations for 70+ students
- Prepare and present interactive lectures for 100+ students teaching essential concepts, UX/UI and game design

Technical Projects and Skills

Multicore Operating System | Technologies: C, ARM64 Assembly, QEMU, Raspberry Pi — Jan 2025–Present
- Build from bare-metal to a rich, multicore OS supporting concurrent applications and a filesystem
- Execute on hardware with support for I/O devices including keyboard input, video display, and sound output

sipc Compiler | Technologies: C++17, LLVM, ANTLR4, Catch2 — Aug 2024–Dec 2024
- Implemented extensions to the tipc compiler including iterator and range-style loops, booleans, and arrays
- Researched and applied multiple LLVM optimization passes, resulting in up to 9x faster benchmark performance
- Created 200+ unit and system tests, achieving 100% coverage of 1500+ new lines of C++ and LLVM code

Programming Skills: C#/.NET, C++, C, SQL/Microsoft SQL Server, Java, Python, x86 and ARM64 Assembly, LLVM, JavaScript, HTML/CSS, Bash/Unix, Git and GitHub, R, VBA, Lua, Julia

Leadership and Service

Chief Operations and Outreach Officer | Community Honor Fund | Charlottesville, VA — Mar 2023–Jan 2025
- Empowered Charlottesville citizens with low-interest loans (totaling up to $1,000) and financial counseling
- Led team of 8 in client acquisition and onboarding, community outreach, and local partnership development
- Developed and maintained WordPress website with custom CSS styling to promote organization's mission