

# ALEXANDER M. HARVEY

## EXPERIENCE

### HiViz LED Lighting

Software/Embedded Systems Intern, May 2025–August 2025

- Developed a **C** program with a custom **GTK** user interface for testing flash-pattern firmware
- Modified firmware originally compiled with **MPLAB** to compile with **GCC**
- Developed a warning-light **animation** program that utilizes a custom, **JSON**-based notation

### Idaho National Laboratory (INL)

DOE Omni Technology Alliance Intern, June 2024–December 2024

- **Presented research** results at the DOE Cybersecurity & Technology Innovation Conference, Dallas
- Developed a **Python** script that generates a map of large power transformer failures and load losses due to seismic activity
- Developed a C program that can apply multiple digital filters of arbitrary shape/order to a digital signal as part of a larger project on Non-Intrusive Load Monitoring

### Oak Ridge National Laboratory (ORNL)

SULI Computer Science Intern, August 2023–December 2023

- **Presented research** results and program improvements at a poster session
- Added a new setting to ORNL's Slicer 2 software (3D printing) for generating double-walled infill
- Updated algorithms for generating and linking infill to improve software flexibility and resolve infill rotation bugs as part of a refactor of Slicer 2

SULI Computer Science Intern, May 2023–July 2023

- **Presented research** and profiling results at a poster session
- Automated 100+ jobs on the Summit and Frontier supercomputers using original Python and Bash scripts
- Used **HPC profiling tools** to identify performance bottlenecks of GPU-based graph algorithms

Software Intern, June 2022–August 2022

- **Presented research:** How emergent patterns in fused deposition modeling can be modeled using cellular automata
- Designed and coded the **Sheet Lamination Slicer** for ORNL's Slicer 2 software (3D printing)
- Used **Qt** cross-platform software to create graphical user interfaces
- Built modular slicing software for geometry packing, DXF file generation, and user visualization

### VulcanForms

Software Engineer I, October 2022–January 2023\*

- Resolved bugs and added various features to **Selective Laser Sintering 3D printer configuration and slicing softwares**
  - Contributed code to user interface and slicer output as a full stack **C++ developer**
- \*employment was cut short by a 10% workforce reduction mainly targeting the most recently hired employees

## EDUCATION

### North Carolina State University, 2024–December 2025

M.S. Computer Science, GPA 3.57/4.0

**Highlights:** Parallel Computer Architecture; Computer Graphics; Software Design; Autonomous Driving; IoT; Machine Learning

### University of North Carolina at Chapel Hill, 2018–22

B.S. Computer Science, GPA 3.45/4.0

**Highlights:** Cybersecurity; Operating Systems; Bioinformatics; Mechatronics; Music and Neuroscience minors; Peer Tutoring

## SKILLS

JavaScript/HTML/CSS/jQuery/React	OpenGL/WebGL	Debian/Arch/Ubuntu Linux	Racket Lisp
Git	Typescript	Bash Shell	PHP
Python	Qt	MIPS Assembly	SQL
C	GTK	Docker	Java
C++	Simple DirectMedia Layer	CUDA	C#

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