Ben Phillips

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WORK EXPERIENCE

Garmin Software Engineering Internship — **Garmin**
May – August 2025
App Architecture, UX Systems, Physics Modeling, Python, Qt

- Designed a new app architecture for a data analysis algorithm development tool with 10,000 line diff
- Added new graphical interaction systems, undo and redo, app session save files, an animation system, and data units tracking, while decreasing total code volume
- Refactored app repo to centralize state management, separate front and back ends, and use type checking
- Developed analytical models for fitness device sensor features, using Fourier analysis for PDE solutions

Quantum Computing Research — **KUARQ Computing Research Group**
May 2024 – May 2025
Quantum Simulation, Algorithms, Embedded Development, Scientific Writing, CSL

- Lead a project to develop quantum circuit simulators for Cerebras Wafer-Scale Engine (WSE)
- Implemented, profiled, and optimized algorithms for unique HPC architecture
- Collaborated with Cerebras and Argonne National Lab
- Created, published, and presented a poster as first author at the Supercomputing 2024 (SC24) conference

Condensed Matter Physics Research — **KU Ovchinnikov Lab**
November 2022 – January 2024
Math Model Research, Visualization Software, 2D Materials, Rust

- Developed a Moiré pattern visualization tool and other research software utilities
- Learned and performed electron beam lithography to help construct devices using 2D materials

EDUCATION

Engineering Physics B.S. in Digital Electronics Design — **University of Kansas**

- Current senior and honors student with 4.0 GPA & minor in film and media studies
- Includes software, computer, and electrical engineering courses, plus physics curriculum

SKILLS

Languages: Rust, C / C++, JavaScript, Python, Java, VHDL, GLSL, WGSL, CSL, Befunge, LaTeX
Frameworks: OpenGL, Linux, WGPU, WebAssembly, ReactJS, Wwise
Technical Skills: Math Modeling, Algorithms, Electronics Hardware, CAD, Sound Design, Lighting Design

PROJECTS

1st Place Winning HackKU Project — **devpost.com/software/wikidungeon**
April 2023
Data Processing, Procedural Generation, Game Engine Development, Game Design, Python

- Lead a team of three to win first prize in a 36-hour coding competition
- Created Wikidungeon, a rogue-like video game with content and layout generated by fetching Wikipedia pages and processing the HTML into game levels connected by Wikipedia's link topology

Handheld Digital Camera - Capstone Project — **[Project Poster Link]**
January - May 2025
Team Engineering, Embedded Development, Image Processing, Linux, C, V4L2, OpenGL ES

- Software lead for system firmware and user interface on an embedded Linux environment
- Worked closely with hardware engineers to allocate SOC resources and maximize features under component, power, space, and budget constraints

Published Physics-Based Minecraft Mod — **[CurseForge Link] | [Modrinth Link]**
2021 – 2025
Applied Math, Open Source Collaboration, Software Publication, Java

- Uses physics calculations with matrix transformations to add physically accurate camera movement to flight
- Continuously maintained and updated repo and binary releases, managing contributors' pull requests
- Over 140,000 downloads between publishing sites Curseforge and Modrinth

Online Desktop Calendar Application — **github.com/delster1/RockChalkRendezvous**
February – May 2024
App Architecture, REST APIs, Software Documentation, C++

- Technical lead on team of 5, combining features from Outlook and When2Meet into a new app
- Designed client and server for REST API architecture, using serialization patterns for networking and storage

CONFERENCE PUBLICATIONS

Towards Scalable Quantum Simulation on Wafer-Scale Engines — **SC24 Poster [Poster Link]**

Phillips, Ben, Kneidel, D., Nobel, A., & El-Araby, E. (2024). The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC24), Atlanta, Georgia, USA, November 2024.