Ben Phillips

jorbon.github.io
github.com/Jorbon
/in/ben-a-phillips
ben.a.phillips@outlook.com
913-213-8967

EDUCATION

Bachelor of Science in Engineering Physics (Digital Electronics Design) — **University of Kansas**, *Expected May 2026*

- Minor in Film and Media, Honors, 4.0 GPA

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

WORK EXPERIENCE

Garmin Software Engineering Internship — **Garmin**, *May – August 2025*

App Architecture, Tools Development, 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*

Mathematical Model Development, Visualization Tools, Reverse Engineering, Rust

- Developed a graphical visualization tool for Moiré patterns to predict material properties
- Reverse-engineered device communication protocols to plot and log data from an electron microscope

Cerner Software Engineering Internship — **Cerner**, *February - May 2021*

Java, ReactJS, SQL

- Implemented front-end and back-end for an internal database compliance checking application

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 a rogue-like video game with content and layout generated by fetching Wikipedia pages and processing the HTML into procedural game levels connected by Wikipedia's link topology

Handheld Digital Camera - Capstone Project — **[Project Poster Link]**, *January - May 2025*

Embedded Development, Firmware Development, Video Streams, 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 Publishing, 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

Embedded Camera Recon System — **[Project Post Link]**, *January – August 2025*

Baremetal Programming, Hardware Interfaces, Real-Time Signal Processing, CAD, C++, Rust

- Designed and constructed a multi-camera capture device running on baremetal C++
- Given 2cm radius, 5W power, and $150 budget design constraints
- Used DMA (Direct Memory Access) and hardware configuration to capture and multiplex live video signals

Indie Game Engine **[Project Devlog Page]**

Physics Simulation, Computer Graphics, Game Engine Developent, OpenGL, WGPU, Rust *2024 – Present*

- Designed, implemented, and optimized a robust collision algorithm for a unique voxel engine
- Established a powerful, multithreaded graphics system using procedural meshing and texture mapping to enable novel level geometries

Online Desktop Calendar Application **github.com/delster1/RockChalkRendezvous**

App Architecture, REST APIs, Software Documentation, C++ *February – May 2024*

- 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.

An Accurate and Scalable Multidimensional Quantum Solver for Partial Differential Equations **SC24 Poster**

Chaudhary, M., Islam, I., Nobel, A., Kneidel, D., Jha, V., **Phillips, Ben**, El-Araby, K., Singh, M., & El-Araby, E. (2024). The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC24), Atlanta, Georgia, USA, November 2024. (**Best Research Poster Award Finalist**)