Ben Phillips

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EDUCATION

Bachelor of Science in Engineering Physics (Digital Electronics Design)   **University of Kansas**
Expected May 2026
- Minor in Film and Media, Honors student, Tau Beta Pi member, 3.99 GPA

SKILLS

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

WORK EXPERIENCE

Garmin Software Engineering Internship   **Garmin**
App Architecture, Tools Development, UX Systems, Physics Modeling, Python, Qt   *May – August 2025*
- 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**
Quantum Simulation, Algorithms, Embedded Development, Scientific Writing, CSL   *May 2024 – May 2025*
- 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**
Mathematical Model Development, Visualization Tools, Reverse Engineering, Rust   *November 2022 – January 2024*
- 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

PROJECTS

Handheld Digital Camera - Capstone Project   **[Project Poster Link]**
Embedded Development, Firmware Development, Video Streams, Linux, C, V4L2, OpenGL ES   *January - May 2025*
- 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

Embedded Camera Recon System   **[Project Post Link]**
Baremetal Programming, Hardware Interfaces, Real-Time Signal Processing, CAD, C++, Rust   *January – August 2025*
- 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

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