

# Cameron Rutherford

HPC/ML/Q Research Software Engineer

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## Summary

High Performance Computing (HPC) / Machine Learning (ML) / Quantum (Q) Research Software Engineer (RSE) with over 3 years of experience deploying, testing, optimizing and teaching people about scientific software and computing systems. I have worked on a wide variety of projects during my time at “the lab”, and have had my code run on everywhere from the largest supercomputer in the world, to a novel quantum computer.

## Skills

### C / C++17

CMake, Spack, CUDA / HIP  
RAJA + Umpire / Kokkos  
MPI, pybind11, toml11, spdlog

### Python

Pytorch, JAX, Distributed ML  
conda, poetry, mamba  
quarto, nbdev, qiskit

### DevOps

Docker, ghcr, S3  
Singularity/Apptainer, charliecloud, podman  
GitHub, GitLab, pre-commit

## Experience

**Software Engineer HPC/ML/Q, Pacific Northwest National Laboratory (Virtual)      2020 - Present**

- test
- test
- test

**Sports Events Coordinator, Whitworth University (Spokane, WA)      2019 - 2020**

**IT Intern, Mac Management, Keysight Technologies (Colorado Springs, CO)      2018**

**Calculus III Grader / Mathematics Tutor, Whitworth University (Spokane, WA)      2017, 2019**

**Basketball Coach, S.G.S. & M.L.C (Sydney, AUS)      2015**

## Publications

- S. Abhyankar, S. Peles, **R. Rutherford**, A. Mancinelli, **Evaluation of AC optimal power flow on graphical processing units.** (IEEE PESGM 2021)
- S. Peles, M. Alam, A. J. Mancinelli, K. Perumalla, **R. C. Rutherford**, J. Ryan, C. G. Petra, **Porting the Nonlinear Optimization Library HiOp to Accelerator-Based Hardware Architectures** (arxiv 2021)

## Conferences

**Practice and Experience in Advanced Research Computing (PEARC)      2023**

**Pacific Northwest National Laboratory (PNNL) Tech Fest      2021-2023**

**Energy Exascale Earth System Model (E3SM) Annual Meeting      2023**

**Sustainable Tools Ecosystem Project (STEP) East Coast Town Hall      2023**

**Exascale Computing Project (ECP) Annual Meeting      2021-2023**

**Pacific Northwest National Laboratory (PNNL) Innovation Summit      2022**

**Co-Design Centre for Quantum Advantage (C2QA) Annual Meeting      2022**

## Education

**Scientist & Engineer Rising Leader Learning Journey      2023**

**Cyber Security & National Security Seminar Series, PNNL      2021 - 2022**

**Whitworth University, B.S. Mathematics and Computer Science      G.P.A 3.9/4.0**

- Outstanding Mathematics Major 2020

- ICPC Pacific Northwest Eastern Washington Site Winner 2018
- Howard R. Gage Memorial Scholarship 2017, 2018, 2019

## **Other Activities**

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<b>Sustainable Horizons Institute HPC Mentor</b>	<b>2022, 2023</b>
<b>Quantum Information Science / HPC STEM Mentor</b>	<b>2022 - Present</b>
<b>Whitworth Chess Club President</b>	<b>2019 - 2020</b>
<b>Pine Codes Hackathon Winner</b>	<b>2019</b>
<b>SpokAnimal Shelter Volunteer</b>	<b>2019</b>
<b>Whitworth Men's Basketball Team</b>	<b>2016 - 2019</b>