(Robert) Cameron Rutherford

HPC/ML/Q Research Software Engineer

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 cameronrutherford Robert C Rutherford

Summary

Experienced HPC/ML/Q Research Software Engineer with 4+ years of expertise in deploying, optimizing, and teaching scientific software on diverse computing systems, including the world's largest supercomputers.

Experience

Sofware Engineer III HPC/ML/Q, PNNL (Virtual)   2024 - Present

- HPC MLOps offering lead, maintaing container and spack module stacks for users
- Continued work on previous and new projects, with DevOps support as needed

Software Engineer II HPC/ML/Q, PNNL (Virtual)   2022 - 2023

- Led ExaSGD to exascale on Frontiner (top500 #1), fully automated CI/CD, custom sparse lin. solv.
- Prototyped ExaGO on AWS using lambda, with OpenAI/PSQL integration for React data viz.
- Deployed CI/CD for Fortan (CPU) -> C++ (GPU) conversion within E3SM project
- Led lab-wide tutorials on HPC MLOps utilizing containerization and Open On Demand

Software Engineer I HPC/ML/Q, PNNL (Virtual)   2021 - 2022

- Led software stack of ExaSGD supporting [x86_64/amd64/ppcle] x [AMD/NVIDIA], across 3 natl. labs
- Led Privacy Preserving ML project to explore FHE, FL, DP and SMC applications in PNNL mission space

Post-Bachelors Research Associate HPC/ML/Q, PNNL (Virtual)   2020 - 2021

- Developed open-source MLFlow offering to save lab $200k per project contract on WandB subscription
- Collaborated on C2QA project research on IBMQ platform, upskilled scientists in Quantum computing

Tech Student 4 Optimization and Control Group, PNNL (Virtual)   2020

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

Publications

- C.S. Oehmen, S. Peles, K. Swirydowicz, C.G. Petra, S.G. Abhyankar, W. Jones, M. Reynolds, **R.C. Rutherford**, **Advanced Computing Is at the Forefront of a New "Moonshot" Revolutionizing the North American Power Grid** (IEEE CSE 2024)
- S. Abhyankar, S. Peles, T. Becejac, J. Holzer, A. Mancinelli, **C. Rutherford**, **Exascale Grid Optimization (ExaGO) toolkit: An open-source high-performance package for solving large-scale grid optizmization problems** (2022)
- 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** (2021)

Education

Whitworth University, B.S. Computer Science and B.S. Mathematics: G.P.A 3.93/4.0

Outstanding Mathematics Major '20   ICPC PNW Site Winner '18   Howard R. Gage Scholarship '17, '18, '19