TREVOR VINCENT, PHD

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EXPERIENCE

MindKing Inc. Nov. 2022 - Now
High Performance Computing (HPC) Consultant

- Built software for QC Design, a company specializing in error correction for quantum computers.
- Developed a quantum error correction unionfind decoder for QC Design.
- Developed a fast C++ graph library for QC Design.
- Developed a Kokkos-based GPU Clifford state simulator for QC Design.

Xanadu Quantum Technologies Dec. 2019 - Nov 2022
High Performance Computing (HPC) Specialist

- Lead HPC theorist/software engineer on the Borealis Quantum Advantage demonstration. [Nature 606]
- Lead author, inventor (pending patent) and developer of the task-based tensor network quantum circuit simulator Jet. [Github], [Quantum 6 (2022), 709]. Led a development team of five people.
- Lead developer of Pennylane-Lightning-Kokkos, the first AMD-GPU quantum simulator. [Github]
- Creator and lead developer of the first benchmark regression analyzer software called 'Benchmark'. It currently analyzes the software Pennylane live at: benchmarks.pennylane.ai
- Helped write C++ and python code in critical parts of several Xanadu libraries (Pennylane, Pennylane Lightning, FlamingPy, TheWalrus).

EDUCATION

University of Toronto *Sept. 2013 - Aug. 2019*
PhD in Physics (Advisor: Prof. Harald Pfeiffer)

Developed next generation numerical methods for solving the Einstein field equations (General Relativity) on supercomputers for the collisions of neutron stars and black holes. I also worked on the neutrino and matter emission properties of binary neutron star mergers for the Nobel-prize winning collaboration LIGO. My PhD work was funded by an NSERC CGSD scholarship ($105,000) and a NSERC CGSM scholarship ($30,000).

University of Winnipeg *Sept. 2013 - Aug. 2019*
Bachelor of Science with Honours (Advisor: Prof. Melanie Martin)

Undergraduate work was funded by 15 scholarships, including three NSERC summer research Awards and one CIHR summer research award. Winner of the Governor General Academic Medal for the highest graduating GPA in the university.

SKILLS

Highly Proficient: C++, C, Python, MPI, CUDA, OpenCL, Bash, Git, CMake, Emacs, GDB, Linux, OpenMP, Taskflow, Kokkos, LAPACK/BLAS/MKL, Github workflows, Matlab, Mathematica, html, CSS

Working Knowledge: Javascript, flask, Java, Fortran, AWS, oneTBB, Vtune, Charm++, Paraview, Visit, papi, perf, pthreads, rust, julia