Christopher Culver

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Summary

Research Assistant at the University of Liverpool with a Ph.D. studying particle physics using quantum computing and machine learning methods. Experience running C++ simulations on supercomputers and performing data analysis in Mathematica or Python. Regularly invited to present research at international conferences and published in academic journals, including PRL which targets a broad physics audience.

EXPERIENCE

Research Assistant, Sept 2020 - Present

University of Liverpool, Liverpool, UK

- Researching quantum computing and machine learning methods to particle physics theories that extend the standard model.
- Applying aforementioned methods to simple models which can also be solved exactly to ensure correctness and sort out implementation details.
- Comparing efficiency of new approaches to traditional high performance computing (HPC) Monte Carlo simulations.

Graduate Student, 2014–2020

George Washington University, Washington, D.C., USA

- Predicted subatomic particle properties with Monte Carlo simulations and compared to experimental measurements.
- Learned high performance computing and managed projects on different supercomputing systems.
- Wrote CPU/GPU code in C++/CUDA for numerically expensive applications. Analyzed data and created publication quality plots in Mathematica.
- Created a workflow to generalize and automate the aforementioned code for different subatomic particles.
- Worked and taught alongside a professor in a collaborative classroom environment.

NASA Intern, Summer 2018 & 2019

NASA Goddard Space Flight Center, Maryland, USA

- Self-taught fundamentals of quantum computing and informed colleagues about the state of the art of the field.
- Ran algorithms on quantum computers to understand the physical limitations of quantum computing.
- Analyzed an algorithm to solve linear systems which has applicability across many domains.

SKILLS

C++, Python, Rust, CUDA, Linux, Mathematica, LaTeX

Statistics, Data Analysis, Monte Carlo Simulation, Scientific Presentation

Analytic Thinking, Self-management, Adaptability, Collaborative, Verbal Communication

ACHIEVEMENTS

1 Publication in Physical Review Letters
6 Publications in Physical Review D.

4 Invited Presentations
4 Contributed Presentations

2 USQCD Computing Allocations for GPU machines

Parke Prize for Excellence in Theoretical Physics, 2020

Prof. Joseph P. Harper Award for Excellence in Physics, 2013

EDUCATION

The George Washington University,
Washington D.C., USA
Ph.D. in Physics 2020
M.Phil. in Physics 2018
HPC Certificate 2018

University of Scranton,
Scranton, PA, USA
B.S. in Physics 2013