



# Cameron Christensen

(801) 971-5735    sci.cameron@gmail.com    1020 OBrien Ct San Jose CA 95126 United States  
<https://www.linkedin.com/in/taranaki>    <https://github.com/cchriste>

## Summary

- Dedication to high-quality work and robust, thorough, maintainable implementations.
- Working cooperatively and closely with others for common goals.
- Building large scale interactive systems for rendering and computation.

## Skills

- **Languages:** C++, Python, JavaScript, Rust, BrightScript
- **Graphics:** PyVista, OpenGL, WebGL, three.js, ray tracing
- **Integration:** ESGF, ViSUS, VisIt, CDAT, Apache Spark, Hadoop
- **Deployment:** Docker, Anaconda, AWS, LaTeX, excellent writing
- **Non-technical:** thorough, instructive, cooperative, creative, patient

## Experience

### SENIOR SOFTWARE ENGINEER, ROKU; SAN JOSE, CA – 2022

- Backend GL shader interpretation, compilation and caching at the (Roku) OS level
- Added seasonal background animations to user interface; stable across all platforms

### SOFTWARE DEVELOPER, UNIVERSITY OF UTAH SCIENTIFIC COMPUTING AND IMAGING; 2010-2022

- Facilitated collaborations across many disciplines including *neuroscience, climatology, orthopedics, cardiology, chemical engineering, and combustion simulation*
- Created cross-platform research libraries using many languages and libraries including C++, Python, JavaScript, Apache Spark, Hadoop, ViSUS IDX / PIDX, CUDA, and OpenGL
- Facilitated multi-modal processing, organization, visualization, and exploration of arbitrarily large, multivariate scientific datasets in both serial and parallel contexts
- Writing, figures, and presentations for research papers and grant proposals

### SENIOR SOFTWARE DEVELOPER; BROADCAST INTERNATIONAL / SORENSON MEDIA; 2007-2009

- Developed APIs and backend tools for IBM Cell Broadband Engine architecture for real-time video compression used in Broadcast and IPTV applications

### SOFTWARE DEVELOPMENT MANAGER; SALT LAKE CITY, UT – 2006 - 2007

- Created web application using point-based rendering to explore lidar acquisitions

### SOFTWARE ENGINEER; MICROSOFT GAMES; SALT LAKE CITY, UT – 2001 - 2006

- Tuned gameplay mechanics in concert with live users
- Engineered a unit testing framework to robustly ensure stability throughout the development of *Amped Snowboarding, Links Golf, Top Spin Tennis*, and their sequels

*M.S. INTERNSHIPS (CONCURRENT WITH SCI INSTITUTE 2015-2017)*

**SOFTWARE DEV INTERN; LAWRENCE LIVERMORE NATIONAL LAB, PLEASANTON, CA – SUMMER 2015**

- Integration of ViSUS IDX with VisIt for interactive exploration of terascale climate datasets
- Library assimilation, remote data access, incremental HPC rendering and computation

**HPC RESEARCH INTERN; ARGONNE NATIONAL LABORATORY, CHICAGO, IL – SUMMER 2016**

- Deployment and comparison of atypical cloud computing libraries such as Apache Spark with low-level MPI using large supercomputers such as a Cray XC40 with 64KiB cores.

**DEVELOPMENT TECHNOLOGY ENGINEER INTERN; NVIDIA CORP., SANTA CLARA, CA – SUMMER 2017**

- Created image composition library with NVLink for interactive large dataset visualization

## Education

- B.S. Computer Science – University of Utah, Salt Lake City, Utah, 1999
- M.S. Computing, Graphics and Visualization – University of Utah, 2019

## Selected Publications

*Embedded Domain-specific Language and Runtime System for Progressive Spatiotemporal Data Analysis and Visualization*, **C. Christensen**, S. Liu, G. Scorzelli, J. Lee, P-T. Bremer, and V. Pascucci, in IEEE 6th Symposium on Large Data Analysis and Visualization – 2016

- Created language to explore arbitrarily large, multiresolution spatiotemporal datasets
- Provided runtime system to facilitate their interactive, incremental parallel execution

*Efficient I/O and Storage of Adaptive-resolution Data*, S. Kumar, J. Edwards, P-T. Bremer, A. Knoll, **C. Christensen**, V. Vishwanath, P. Carns, J. Schmidt, and V. Pascucci, in SC14: Intl. Conference for High Performance Computing, Networking, Storage and Analysis – 2014

- Assisted creation of adaptive format for storage and spatiotemporal dataset access
- API for access using algorithms that efficiently align data with memory boundaries

*Parallelization of Diagnostics for Climate Model Development*, J. McEnerney, S. Ames, **C. Christensen**, C. Doutriaux, T. Hoang, J. Painter, B. Smith, Z. Shaheen, and D. Williams, in Journal of Software Engineering and Applications – 2016

- Added parallel computation of climate model analysis to UV-CDAT application suite

*A Benchmarking Study to Evaluate Apache Spark on Large-Scale Supercomputers*, George K. Thiruvathukal, **Cameron Christensen**, Xiaoyong Jin, Francois Tessier, Venkatram Vishwanath, in arXiv:1904.11812v2 [cs.DC] – 2019

- Enabled deployment of Apache Spark and Hadoop on two modern supercomputers
- Compared their distributed data analysis performance with C-based MPI computation