

Qi, Wu

Looking for **Graphics/Machine-Learning** Internship (Summer 2023)

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<https://wilsoncernwq.github.io>

COMPUTER SCIENCE SKILLS

Programming Languages: C/C++, Python, JavaScript/CSS/HTML, Fortran

Parallel Programming: CUDA, Intel-TBB/ISPC, MPI, OpenMP

Graphics Libraries: OSPRay, OptiX, DriectX-DXR, OpenGL, WebGL

Machine Learning: PyTorch

EDUCATION

University of California - Davis, GPA 4.000

PhD Candidate in Computer Science

09/2018 – 06/2024 (Expected)

Davis, CA, United States

SCI Institute, University of Utah, GPA 3.976

Master's in Computing, Graphics & Visualization Track

08/2016 – 05/2018

Salt Lake City, UT, United States

Hong Kong University of Science and Technology (HKUST), First Class Honor

Bachelor of Science in Physics, Physics & Mathematics Option

09/2012 – 06/2016

Hong Kong, China

Ecole Polytechnique Fédérale de Lausanne (EPFL)

Academic Exchange in Physics

02/2015 – 08/2015

Lausanne, Switzerland

EXPERIENCE

Graduate Research Assistant, University of California - Davis, [Kwan-Liu Ma](#)

- Research in the field of expressive visualization, high-fidelity rendering, and machine learning.

09/2018 – Present

Davis, California

Graduate Research Internship, Argonne National Laboratory, [Joseph A. Insley](#) & [Silvio Rizzi](#)

- Develop declarative and reactive programming interface in Ascent for in situ visualization.
- Research on distributed neural representation for large-scale interactive volume rendering.

07/2022 – 12/2022

Chicago, Illinois

Summer Internship, Intel Corporation, [Advanced Rendering Technology Team](#)

- Research on deep-learning-assisted direct storage streaming for real-time rendering.

07/2021 – 09/2021

Santa Clara, California

Summer Internship, Intel Corporation, [Advanced Rendering Technology Team](#)

- Research on efficient direct storage streaming for volumetric data.

07/2020 – 09/2020

Santa Clara, California

Summer Internship, Intel Corporation, Software Engineering for Computer Graphics

- SIMD optimizations of the traversal and the scheduling algorithm for hardware ray tracing.

07/2019 – 09/2019

Hillsboro, Oregon

Graduate Research Internship, Argonne National Laboratory, [Joseph A. Insley](#) & [Silvio Rizzi](#)

- Develop a CPU rendering system inside the scalable and interactive parallel volume rendering – VL3.
- Develop two remote visualization clients for parallel volume rendering on supercomputer – Theta.

07/2018 – 09/2018

Chicago, Illinois

Graduate Research Assistant, University of Utah, [Chuck Hansen](#)

- Code modernization for many-core Intel architectures using the OSPRay ray-tracing library.
- Integrate the OSPRay ray-tracing library into the visualization software – Visit.

12/2016 – 05/2018

Salt Lake City, Utah

Capstone Research, Hong Kong University of Science and Technology, [Michael Wong](#)

- Statistical analysis of neuron activities during monkey saccades using machine learning techniques.

09/2015 – 06/2016

Hong Kong, China

Summer Student, European Organization for Nuclear Research (CERN), [Mathieu Benoit](#)

- Develop an auto-optimization program inside ALLPIX, a simulation software for silicon pixel detector.

06/2015 – 08/2015

Geneva, Switzerland

Undergraduate Research Program, Hong Kong University of Science and Technology, [Nian Lin](#)

- Analyze images obtained from low-temperature scanning tunneling microscopy (STM).
- Use STM to measure and manipulate molecular properties and states on single molecular level.
- Implement a Monte Carlo simulation program for supra-molecular self-assembly.

06/2013 – 12/2014

Hong Kong, China

PUBLICATION

- Qi Wu**, David Bauer, Michael J. Doyle, and Kwan-Liu Ma “[Instant Neural Representation for Interactive Volume Rendering](#),” ArXiv Preprint (2022)
- David Bauer, **Qi Wu**, and Kwan-Liu Ma “[FoVolNet: Fast Volume Rendering using Foveated Deep Neural Networks](#),” IEEE Visualization Conference (2022) **Best Paper Honorable Mentions**
- Qi Wu**, Michael J. Doyle, Kwan-Liu Ma “[A Flexible Data Streaming Design for Interactive Visualization of Large-Scale Volume Data](#),”

- The Eurographics Symposium on Parallel Graphics and Visualization (2022)
- Stefan Zellmann, **Qi Wu**, Alper Sahistan, Kwan-Liu Ma, and Ingo Wald. "[Beyond ExaBricks: GPU Volume Path Tracing of AMR Data](#)." ArXiv Preprint (2022).
 - **Qi Wu**, Tyson Neuroth, Oleg Igouchkine, Konduri Aditya, Jacqueline H. Chen, Kwan-Liu Ma "[DIVA: A Declarative and Reactive Language for in situ Visualization](#)." IEEE Large Scale Data Analysis and Visualization Symposium (2020).
 - Mengjiao Han, Ingo Wald, Will Usher, **Qi Wu**, Feng Wang, Valerio Pascucci, Charles D. Hansen, Chris R. Johnson. "[Ray Tracing Generalized Tube Primitives: Method and Applications](#)." Computer Graphics Forum (2019).
 - **Qi Wu**, Will Usher, Steve Petruzza, Sidharth Kumar, Feng Wang, Ingo Wald, Valerio Pascucci, Charles D. Hansen. "[VisIt-OSPRay: Toward an Exascale Volume Visualization System](#)." The Eurographics Symposium on Parallel Graphics and Visualization (2018).
 - Wang, Feng, Ingo Wald, **Qi Wu**, Will Usher, Chris R. Johnson. "[CPU Isosurface Ray Tracing of Adaptive Mesh Refinement Data](#)." IEEE Visualization Conference (2018).
 - Guillaume Favelier, Charles Gueunet, Attila Gyulassy, Julien Kitware, Joshua Levine, Jonas Lukasczyk, Daisuke Sakurai, Maxime Soler, Julien Tierny, Will Usher, **Qi Wu**, "[Topological data analysis made easy with the Topology ToolKit](#)." IEEE Visualization Conference Tutorial (2018).
 - Lin, Tao, **Qi Wu**, Jun Liu, Ziliang Shi, Pei Nian Liu, Nian Lin. "[Thermodynamic versus Kinetic Control in Self-Assembly of Zero, One, Quasi-two and Two Dimensional Metal-Organic Coordination Structures](#)." The Journal of Chemical Physics (2015).

PRESENTATIONS

- **IEEE Visualization Conference Tutorial**, "Topological Data Analysis Made Easy with the Topology ToolKit" (2018)
- **University of Utah CCMSC Annual Meeting**, "VisIt-OSPRay: Toward an Exascale Volume Visualization System" (2018)
- **University of Utah CCMSC Annual Meeting**, "VisIt-OSPRay: Scalable Volume Rendering on Intel KNL CPUs" (2017)
- **Super Computing Conference University of Utah Booth**, "Volume Rendering with VisIt-OSPRay" (2016)
- **Physical Society of Hong Kong (PSHK) Conference**, "Monte Carlo Simulation for 2D Supramolecular Self-Assembly" (2014)
- **HKUST UROP**, "The effect of metal atoms in the MOFs self-assembly" (2014)

AWARDS

University of Utah Best Data Visualization Project Prize Winner (2016)
 First Honor Classification on Graduation (CGA A- and above), HKUST (2016)
 Dean's List of HKUST for Academic Excellence (2013 & 2016)
 HKUST Ho & Ho Foundation Undergraduate Full Scholarship for 4 Years (2012~2016)
 Finalist of Mr. Armin & Mrs. Lillian Kitchell Undergraduate Research Award (2014)

PROJECTS

"[NBASTatsVIS](#)": An information visualization tool for basketball player statistics.
 "[TopoVol](#)": A computational topology guided volume rendering tool.
 "[qaRay](#)": A distributed CPU path-tracing engine with a Blender plugin.
 "[DXServer](#)": A scalable multi-client remote volume visualization system.
 "[OSPRay-PIDX Viewer](#)", A light-weighted client-server parallel volume renderer for large dataset using OSPRay.
 "[OSPRayTinyLoader](#)", A mesh viewer program using OSPRay + TinyObjLoader as backends.
 "[TerrainViewer](#)", A real-time interactive program to generate and render procedural terrain
 "[ImGui TransferFunctionModule](#)", A light weighted ImGui widget for transfer function manipulation.