

NICHOLAS SHARP

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EDUCATION

- SPRING 2021 PhD in Computer Science, **Carnegie Mellon University** (*in progress*)
Advisor: Keenan Crane
Topics: Geometry Processing, Discrete Differential Geometry, Robust Geometric Algorithms
- MAY 2015 Bachelor of Science, **Virginia Polytechnic Institute and State University** (Virginia Tech)
Triple Major *In Honors* — Computer Science, Mathematics, and Engineering Physics
Minors: Physics and Statistics

PUBLICATIONS

- Nicholas Sharp**, Yousuf Soliman, and Keenan Crane. Navigating Intrinsic Triangulations. *ACM Transactions on Graphics (TOG)*, 38(4):55, 2019
- Nicholas Sharp**, Yousuf Soliman, and Keenan Crane. The Vector Heat Method. *ACM Transactions on Graphics (TOG)*, 38(3):24, 2019
- Nicholas Sharp** and Keenan Crane. Variational Surface Cutting. *ACM Transactions on Graphics (TOG)*, 2018
- Anna Ritz, Christopher L Poirel, Allison N Tegge, **Nicholas Sharp**, Kelsey Simmons, Allison Powell, Shiv D Kale, and TM Murali. Pathways on demand: automated reconstruction of human signaling networks. *npj Systems Biology and Applications*, 2016
- Allison N Tegge, **Nicholas Sharp**, and TM Murali. Xtalk: a path-based approach for identifying crosstalk between signaling pathways. *Bioinformatics*, 2016

WORK EXPERIENCE

- FALL 2018 | **Research Intern** at OCULUS VR RESEARCH / FACEBOOK REALITY LABS
- SUMMER 2016 | Designed and implemented a new system for learned appearance modeling in 3D reconstructions using differentiable rendering (with PyTorch and NVIDIA OptiX). Developed an algorithm for temporal correspondence in scan geometry.
- SUMMER 2015 | Designed and built multicamera reconstruction systems, including hardware, software, calibration, and processing pipeline.
- SUMMER 2013 | **Software Development Intern** at MICROSOFT SILICON VALLEY
- SUMMER 2012 | **High Energy Density Physics Intern** at LAWRENCE LIVERMORE NATIONAL LAB
Integrated new visualization capabilities into a massively parallel multiphysics radiation-hydrodynamics codebase. Utilized some of the nation's most powerful supercomputers.
- SUMMER 2011 | **NASA Research Intern** at JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LAB
Developed an empirical computer model of the terrestrial magnetosphere synthesizing first-principle techniques and data analytics. Improved model performance by a factor of 5.

AWARDS

NSF Graduate Research Fellowship

Finalist, CRA Undergraduate Researcher Award

Mathematical Contest in Modeling

↳ 2014 team designated Meritorious Winners

Competitive Programming World Finalist

↳ ACM ICPC 2015 World Finals in Marrakech, Morocco

↳ ACM ICPC 2014 World Finals in Ekaterinburg, Russia

POSTERS AND PRESENTATIONS

Machine Learning Models for Terrestrial Space Weather Forecasting. *Undergraduate Presentation*. Brendan Avent, **Nicholas Sharp**, and Dhruv Batra. SIAM Annual Meeting 2014.

Optimal Control in Time-Varying Velocity Fields using Alpha Hulls. *Undergraduate Presentation*. **Nicholas Sharp** and Shane D. Ross. SIAM Annual Meeting 2014.

Set-based optimal control in 3D current fields using alpha shapes. *Poster*. **Nicholas Sharp** and Shane D. Ross. Virginia Space Grant Consortium Research Symposium 2014.

TS07D Empirical Geomagnetic Field Model as a Space Weather Tool. *Poster*. **Nicholas Sharp**, Grant Stephens, and Mikhail Sitnov. American Geophysical Union Fall Meeting 2011.

SERVICE

Reviewer

↳ Eurographics, CGTA

ACM Inter-Collegiate Programming Contest (ICPC) Problem Author

↳ 2017, 2018

COMPUTING PROFICIENCIES

Languages

C++ Python PyTorch
OpenGL MATLAB L^AT_EX

Skills

Mathematical Modeling and Algorithm Design
Data and Algorithm Visualization
High Performance Scientific Computing
Parallel and Distributed Computation
Unix and Linux Environments