# Mike Pozulp

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## Interests

Scientific Computing, Monte Carlo, Compilers

## Education

| **University of California, Davis** | Davis, CA | Expected May 2025 |
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PhD in Computer Science

| **The College of William & Mary** | Williamsburg, VA | May 2015 |
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Bachelor of Science, *magna cum laude*
Major: Computer Science
Minor: Economics
GPA: 3.75/4.00

## Presentations and Publications

- **"Extending 1D Transport Using Neural Nets to GPUs"** (with P. Brantley), Abstract submitted to *Joint International Conference on Supercomputing in Nuclear Applications + Monte Carlo*, May 2020
- **"Status of LLNL Monte Carlo Transport Codes on Sierra GPUs"** (with M. McKinley, R. Bleile, P. Brantley, S. Dawson, M. O'Brien, D. Richards), *International Conference on Mathematics and Computational Methods applied to Nuclear Science and Engineering (M&C)*, August 2019, 2160-2165
- **"1D Transport Using Neural Nets, SN, and MC,"** *International Conference on Mathematics and Computational Methods applied to Nuclear Science and Engineering (M&C)*, August 2019, 876-885
- **"Porting the Opacity Client Library to a CPU-GPU Cluster Using OpenMP4.5"** (with J. Kimko, R. Haque, and L. Grinberg), *International Conference for High Performance Computing, Networking, Storage, and Analysis (SC)*, November, 2017
- **"Introduction to Monte Carlo,"** *Lawrence Livermore National Laboratory's Computation Summer Student Seminar Series*, June, 2017 and *The College of William & Mary Math Department Colloquium Series*, October, 2017
- **"Optimizing Application I/O by Leveraging the Storage Hierarchy Using the Scalable Checkpoint Restart Library with a Monte Carlo Particle Transport Application on the Trinity Advanced Computing System"** (with G. Becker, P. Brantley, S. Dawson, K. Mohror, A. Moody, and M. O'Brien), *International Conference for High Performance Computing, Networking, Storage, and Analysis (SC)*, November, 2016
- **"Creating a Framework for Systematic Benchmarking of High Performance Computing Systems,"** *International Conference for High Performance Computing, Networking, Storage, and Analysis (SC)*, November, 2014

## Work Experience

| **Lawrence Livermore National Lab** | Livermore, CA | July 2015 - Present |
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Position: Computer Scientist

- Software development for the Monte Carlo Transport Project

| **W&M High Performance Computing** | Williamsburg, VA | February 2012 - May 2015 |
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Position: Undergraduate Assistant to High Performance Computing

- Developed a distributed-memory parallel N-1 and N-N I/O performance benchmark using MPI
- Performed STREAM memory benchmarking, code timing, and cycle counting
- Supported HPC applications with data visualization and performance refactoring

- Assembly/maintenance of diverse CPU + GPU distributed-memory compute clusters, totaling 900+ cores and 21 TFLOP/s theoretical peak performance
- Developed graphical tools for monitoring jobs and node statistics

**NASA Langley Research Center**  Hampton, VA  January - August 2014
Position: UAV Engineering Intern

- Developed ground control station that controls UAVs with MAVLink transmissions and collects ADS-B, GPS, and other RF data from UAVs to create a live display of UAVs in the local airspace
- Performed Hardware-In-The-Loop Simulation tests of ground control station using autopilot boards and commercial flight simulator
- Prepared hardware/software systems for multi-rotor and fixed-wing aircraft

**NASA Ames Research Center**  Moffett Field, CA  May - August 2013
Position: Supercomputing Research Intern

- Investigated performance scaling in four generations of Intel Xeon processors running the NASA Parallel Benchmarks on top-20 supercomputer Pleiades
- Researched effects of MPI communication traffic across Pleiades interconnect

## Computer Skills

- C/C++, Python, Java, R, Bash, MPI, OpenMP, CUDA, Git/Github, LLVM, Latex
- Linux, OS X, Windows, Solaris, Android, Web

## Honors, Awards, and Memberships

- Argonne Training Program in Extreme Scale Computing, Attendee  August 2016
- Stanford CS148 Raytracing Project, 2nd Place  December 2015
- Phi Mu Epsilon Math Honors Fraternity, Student Member  2013 - 2015
- Association for Computing Machinery, Student Member  2013 - 2015
- W&M Small Hall Makerspace Grant Recipient ($700)  May 2014
- ACM Student Research Competition Travel Award ($500)  September 2014
- NASA Ames Poster Contest, 1st Place  August 2013
- Virginia Space Grant Consortium Grant Recipient ($6750)  June 2013

## Technical Courses

**University of California, Berkeley**
- Numerical Simulation in Radiation Transport (NE 255)  Fall 2018

**University of California, Davis**
- Network Architecture & Resource Management (EEC 273/ECS258)  Fall 2018
- Quantum Mechanics (PHY115A)  Spring 2017
- Analytical Mechanics II (PHY 105B)  Winter 2017
- Analytical Mechanics I (PHY 105A)  Fall 2016

**University of California, San Diego**
- High Energy Density Physics (MAE 207)  Fall 2017

**Stanford University**
- Partial Differential Equations in Engineering (CME 204)  Winter 2018
- Compilers (CS 143)  Spring 2016
- Introduction to Computer Graphics (CS 148)  Fall 2015

**The College of William & Mary**

- Random Walks in Biology (APSC 456) — Spring 2015
- Reliability (CS 668) — Spring 2015
- General Physics II, Honors (PHYS 102H) — Spring 2015
- Analog Electronics (PHYS 252) — Spring 2015
- Ordinary Differential Equations (MATH 302) — Fall 2014
- General Physics I, Honors (PHYS 101H) — Fall 2014
- Digital Electronics (PHYS 351) — Fall 2014
- Finite Automata (CS423) — Fall 2013
- Operating Systems (CS 424) — Fall 2013
- Applied Financial Derivatives (ECON 415) — Fall 2013
- Probability (MATH 401) — Fall 2013
- Numerical Analysis (MATH 413) — Fall 2013
- Programming Languages (CS 312) — Spring 2013
- Systems Programming (CS 415) — Spring 2013
- Econometrics (ECON 308) — Spring 2013
- Multivariable Calculus (MATH 212) — Spring 2013
- Algorithms (CS 303) — Fall 2012
- Computer Organization (CS 304) — Fall 2012
- Intermediate Microeconomics (ECON 303) — Fall 2012
- Software Development (CS 301) — Spring 2012
- Database Systems (CS 321) — Spring 2012
- Intermediate Macroeconomics (ECON 304) — Spring 2012
- Linear Algebra (MATH 211) — Spring 2012
- Data Structures (CS 241) — Fall 2012
- Discrete Structures (CS 243) — Fall 2012