

# Mike Pozulp

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Lawrence Livermore National Laboratory  
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## Personal Information

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Citizenship: U.S.

## Interests

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Scientific Computing, Monte Carlo, Compilers

## Education

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### University of California, Davis

PhD in Computer Science

GPA: 4.00/4.00

Davis, CA

Expected May 2025

### The College of William & Mary

Bachelor of Science, *magna cum laude*

Major: Computer Science

Minor: Economics

GPA: 3.75/4.00

Williamsburg, VA

May 2015

## Presentations and Publications

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Lead author indicated by \*

- **“Extending 1D Transport Using Neural Nets to GPUs”** (with P. Brantley). To appear in *Proceedings of SNA+MC 2020*. Tokyo, Japan. May 2020.\*
- **“Transitioning the Scientific Software Toolchain to Clang/LLVM”** (with S. Dawson, R. Bleile, P. Brantley, M. McKinley, M. O'Brien, D. Richards). To appear in *Proceedings of EuroLLVM 2020*. Paris, France. April 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). In *Proceedings of M&C 2019*, 2160-2165. Portland, Oregon. August 2019.
- **“1D Transport Using Neural Nets, SN, and MC.”** In *Proceedings of M&C 2019*, 876-885. Portland, Oregon. August 2019.\*
- **“Porting the Opacity Client Library to a CPU-GPU Cluster Using OpenMP4.5”** (with J. Kimko, R. Haque, and L. Grinberg). In *Proceedings of SC17*. Denver, Colorado. November 2017.
- **“Introduction to Monte Carlo.”** Presented at *LLNL's Computation Intern Seminar Series*, June, 2017 and *W&M Math Department Colloquium Series*, October, 2017.\*
- **“LLNL Monte Carlo Transport Research Efforts for Advanced Computing Architectures”** (with P. Brantley, R. Bleile, S. Dawson, N. Gentile, M. McKinley, M. O'Brien, D. Richards, D. Stevens, J. Walsh, and H. Childs). In *Proceedings of M&C 2017*. Jeju, Korea. April 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). In *Proceedings of SC16*. Salt Lake City, Utah. November 2016.\*
- **“Creating a Framework for Systematic Benchmarking of High Performance Computing Systems.”** In *Proceedings of SC14*. New Orleans, Louisiana. November 2014.\*

SNA+MC is the Joint International Conference on Supercomputing in Nuclear Applications + Monte Carlo.

EuroLLVM is the European LLVM Developers' Meeting.

M&C is the International Conference on Mathematics and Computational Methods applied to Nuclear Science and Engineering.

SC is the International Conference for High Performance Computing, Networking, Storage, and Analysis.

## Work Experience

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**Lawrence Livermore National Lab**

Livermore, CA

July 2015 - Present

Position: Computer Scientist

- Software development for the Monte Carlo Transport Project

**W&M High Performance Computing**

Williamsburg, VA

February 2012 - May 2015

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**

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

**Fellowships, Research Grants, and Contracts**

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|---|----------------|
| • LLNL LEARN Research Funding (\$53,126)                    | 2020 January   |
| • W&M Small Hall Makerspace Grant Recipient (\$700)         | 2014 May       |
| • ACM Student Research Competition Travel Award (\$500)     | 2014 September |
| • Virginia Space Grant Consortium Grant Recipient (\$6,750) | 2013 June      |

**Honors, Prizes, and Awards**

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| • LLNL Code Development Bronze Star Award              | 2019 August   |
| • LLNL Computational Physics Monthly Recognition Award | 2018 November |
| • Stanford CS148 Raytracing Project, 2nd Place         | 2015 December |
| • NASA Ames Poster Contest, 1st Place                  | 2013 August   |

**Professional Development**

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• SNA+MC 2020	Tokyo, Japan	2020 May 18-22
• European LLVM Developer Meeting	Paris, France	2020 April 6-7
• LLVM Developer Meeting	San Jose, California	2019 October 22-23
• NSSC Fall Workshop	Livermore, California	2019 October 7-9
• M&C 2019	Portland, Oregon	2019 August 25-29
• LLVM Developer Meeting	San Jose, California	2018 October 17-18
• J34 Applied Computer Science Meeting	Albuquerque, New Mexico	2018 February 11-16
• Supercomputing (SC)	Denver, Colorado	2017 November 12-17
• DoE CoE Performance Portability Meeting	Denver, Colorado	2017 August 21-24
• Supercomputing (SC)	Salt Lake City, Utah	2016 November 13-18
• DoE CoE Performance Portability Meeting	Glendale, Arizona	2016 April 18-22
• ATPESC	St. Charles, Illinois	2016 July 31 - August 12
• Supercomputing (SC)	New Orleans, Louisiana	2014 November 16-21
• Supercomputing (SC)	Denver, Colorado	2013 November 17-22

## Technical Coursework

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### University of California, Berkeley

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| • Numerical Simulation in Radiation Transport (NE 255) | 2018 Fall |
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### University of California, Davis

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|---|-------------|
| • Network Architecture & Resource Management (EEC 273/ECS258) | 2018 Fall   |
| • Quantum Mechanics (PHY115A)                                 | 2017 Spring |
| • Analytical Mechanics II (PHY 105B)                          | 2017 Winter |
| • Analytical Mechanics I (PHY 105A)                           | 2016 Fall   |

### University of California, San Diego

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|---|-----------|
| • High Energy Density Physics (MAE 207) | 2017 Fall |
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### Stanford University

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

### The College of William & Mary

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