January 2020

Mike Pozulp

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Personal Information

Citizenship: U.S.

Interests

Scientific Computing, Monte Carlo, Compilers

Education

University of California, Davis — Davis, CA — Expected May 2025
PhD in Computer Science
GPA: 4.00/4.00

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

Presentations and Publications

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). Submitted to *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

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

- 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

- 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

- 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

• SNA+MC 2020	Tokyo, Japan	2020 May 18-22
• 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

University of California, Berkeley

- Numerical Simulation in Radiation Transport (NE 255) — 2018 Fall

University of California, Davis

- 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

- High Energy Density Physics (MAE 207) — 2017 Fall

Stanford University

- 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

- 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