Mike Pozulp

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Lawrence Livermore National Laboratory
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Interests

Scientific Computing, Monte Carlo, Compilers

Education

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

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

- **"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

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 - May 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