Michael M. Pozulp

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Lawrence Livermore National Laboratory
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Interests

Scientific Computing, Monte Carlo, Visualization

Education

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

- Pozulp, M., et al. (2016). "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," LLNL-POST-698037. Poster presented at Supercomputing 2016, Salt Lake City, UT, 14-17 November.
- Brantley, P., et al. (2016). "LLNL Mercury Project Trinity Open Science Final Report," LLNL-TR-689799. Technical report delivered to staff at Los Alamos National Laboratory and Sandia National Laboratory, 20 April.
- Mohror, K. and Pozulp, M. (2016). "Performance Portability for Burst Buffers with the Scalable Checkpoint/Restart Library (SCR)", LLNL-PRES-689447. Oral presentation at the Department of Energy Centers of Excellence Performance Portability Meeting, Glendale, AZ, 19-21 April.
- Brantley, P., et al. (2016). "Mercury User Guide: Version 5.2," LLNL-SM-560687 (Modification #10). Software manual describing capabilities of the Mercury code.
- Pozulp, M., (2014). "Creating a Framework for Systematic Benchmarking of High Performance Computing Systems." Poster presented at Supercomputing 2014, New Orleans, LA 17-20 November.

Work Experience

Lawrence Livermore National Lab   Livermore, CA   July 2015 – Present
Position: Computer Scientist
- Developer, Opacity Physics Library 2.0, radiative transfer physics data library, contributed
  - Backwards-compatible rewrite of entire code, production quality build system, automated test suite, and useful documentation for implicit monte carlo and multi-physics user codes
- Developer, Mercury, MPI + OpenMP monte carlo radiation transport, additions include
  - Reduced checkpoint/restart time by 1000x using node-local storage, like RAM disks and SSDs, by adding the Scalable Checkpoint Restart (SCR) library
  - Reduced checkpoint size from $O(4000n)$ to $O(8n)$ by modifying usage of Silo I/O library

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++, Java, Python, R, Unix shell, MPI, OpenMP, CUDA, Git/Github
- Silo, HDF5, Matplotlib, Boost, OpenGL, Visit, Swing, Qt, Scalable Checkpoint Restart (SCR)
- Linux, OS X, Windows, Solaris, Android, Web

Honors, Awards, and Memberships

- Argonne Training Program in Extreme Scale Computing (ATPESC), 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 (ACM), 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