Matt Bryson

Contact Information

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OBJECTIVE

To continue work in the fields of non-volatile storage and memory systems as part of the Center for Storage Systems. Additional interests include operating systems, distributed systems, and high performance computing research.

EDUCATION

B.S. Computer Science (August 2016)
California Lutheran University
In-major GPA 3.73. GPA 3.5.
Undergraduate Coursework: Operating Systems, Algorithms, Computer Architecture, Software Engineering, Object Oriented Programming, Linear Algebra

Ph.D. Computer Science (Expected June 2022)
University of California, Santa Cruz

PUBLICATIONS

Matt Bryson, Daniel Bittman, Darrell Long, Ethan Miller. Twizzler: The Design and Implementation of a NVM Aware OS (Presentation & Extended Abstract). Accepted, Non-volatile Memories Workshop (NVMW) 2017.

Matt Bryson, Suren Byna (Advisor), Alex Sim (Advisor), John Wu (Advisor). The Search for Missing Parallel I/O Performance on the Cori Supercomputer (Poster & Extended Abstract). Supercomputing 2016.

Wahid Bhimji, Debbie Bard, Melissa Romanus, David Paul, Andrey Ovsyannikov, Brian Friesen, **Matt Bryson**, Joaquin Correa, Glenn K. Lockwood, Vakho Tsulaia, Suren Byna, Steve Farrell, Doga Gursoy, Chris Daley, Vince Beckner, Brian Van Straalen, David Trebotich, Craig Tu. Accelerating Science with the NERSC Burst Buffer Early User Program. Cray User Group 2016, Best Paper.

RESEARCH EXPERIENCE

Ph.D. Student September 2016
Center for Storage Systems
University of California, Santa Cruz

- Developing a non-volatile memory-aware operating system.
- Developing a Globally Addressable Storage System.
- Developing a model for Programming on Non-volatile memory systems.
- Contributed to the writing of a NSF grant for non-volatile operating system research.
- Accepted to Non-volatile Memories Workshop (NVMW) 2017

Research Intern August 2015 - April 2016
Scientific Data Management Group
Lawrence Berkeley National Lab

- Currently publishing a survey paper on use of the extended memory hierarchy in high performance computers (HPCs)
- Developed middleware to utilize extended memory hierarchy for applications that utilize HDF5
- Benchmarked HPC storage systems

- Optimized NVRAM Storage Usage (Burst Buffer)

Research Intern at UC Berkeley TRUST REU June 2015 - August 2015
Lawrence Berkeley National Lab
- Researched burst buffers as a method for improving the computational efficiency of supercomputers
- Developed a middleware application to test burst buffer effectiveness
- Wrote a technical paper on the effectiveness of the middleware application
- Presented work at several UC Berkeley and LBNL presentation venues

Capstone Research January 2014 - June 2014
California Lutheran University
- Designed a virtual reality desktop environment for a more effective method of multitasking. Utilized Oculus Rift, Oculus SDK, and X11 to produce a virtual reality based desktop environment.

TEACHING EXPERIENCE

T.A. CMPS 12B/M January 2017 - March 2017
Baskin School of Engineering
University of California, Santa Cruz
- Wrote solution manuals and grading rubrics for labs.
- Taught two lab sections, including directing two tutors.
- Wrote scripts to grade lab assignments.

Service

HPC-IODC 2018 Program Committee
ISC 2018 Project Poster Program Committee

PROFESSIONAL EXPERIENCE

IT Manager December 2013 - May 2015
IT Support June 2012 - December 2013
Cobalt Construction
- Managed Linux, Windows, & Hyper-V Servers (2 redundant file servers, 2-5 app servers, 2 hyper-v servers)
- Managed Network Configurations (4 8 Firewalls, Routing Equipment)
- Troubleshot and Repaired Computers (80+ computers under company ownership)
- Programmed Custom Software (Java)
- Orchestrated Infrastructure Upgrades (Designed & Implemented)
- Directed department personnel & finances (3 personnel, 400-600 thousand dollars)

Programming Consultant October 2014 - January 2015
Nexgenic
- Configured Linux, Windows, & Hyper-v Management Servers
- Developed Web Applications (PHP, Bootstrap, AngularJS)

PRESENTATIONS

Unifying File System Traces and the Analysis of the CERN EOS System December, 2017
SSRC IAB Meeting
University of California, Santa Cruz

Nomenclature: Flexible Name Resolution on a Flat Object Namespace May, 2017
SSRC Retreat
University of California, Santa Cruz

The Search for Missing Parallel I/O Performance on the Cori Supercomputer November, 2016
Supercomputing 2016 ACM Poster Session
Lawrence Berkeley National Lab

The Search for Missing Parallel I/O Performance on the Cori Supercomputer April 28, 2016
LBNL SULI Poster Session
Lawrence Berkeley National Lab

Improving VPIC I/O Performance Using Burst Buffers August 4,6, 2015
TRUST REU & SUPERB REU
UCB Technical Talks, UCB Poster Session, LBNL Poster Session
University of California, Berkeley, Lawrence Berkeley National Lab

Burst Buffers & Their Role in High Performance Computing July 14, 2015
Computer Science Summer Student Talk Series
Lawrence Berkeley National Lab

The Use of Virtual Reality for GUI Immersion & Workspace Optimization April 2014
8th Annual Festival of Scholars
California Lutheran University

SKILLS

Software GDB; Valgrind; OpenRefine; TexMaker; Weka; Make; Subversion (SVN); Parquet; Spark; PySpark; Jupyter; BerkeleyDB; SQL Management Studio (Microsoft & MySQL); Hyper-V Management Utility; PHPMyAdmin; Git; Gitlab, Nexenta; Zetabyte File System (ZFS); DFSR; Eclipse

Programming Languages C; C++; Python; R; Java; Perl; Limited Ruby on Rails; PHP; 8051 Assembly; AngularsJS; Bootstrap; MPI; HTML; CSS; Limited VB.NET; Javascript

AWARDS

California Lutheran University Dean's List Fall/Spring Semesters 2012-15
California Lutheran University Provost Scholarship
American Institute of Aeronautics and Astronauts Scholarship
Eagle Scout

EXTRA CURRICULARS

House Manager and Technical Chair of Sigma Alpha Mu Fraternity
Member of California Lutheran University Regionals ACM ICPC Team 2013, 2014