Résumé

Jason B. Hill

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Technical Skills

Languages/APIs:	expert:	Python, C, Cython, LaTeX, Sage
	working:	C++, OpenMP, MPI, Boost, SCSI Generic (SG), pandas, R
OS:	enterprise:	SLES and variants (e.g., OpenSUSE), RHEL and variants (e.g., CentOS)
	personal:	Debian
	experience:	Mac OS X, Windows 3.1+, OpenSolaris/OpenIndiana

High Performance Technical Computing (HPTC): Experience coding for up to 405,504-core distributed CPU/GPGPU systems, 4,096-core shared-memory single-image Linux systems, fixed-topology supercomputers, multi-controller HA RAID/MAID/JBOD SCSI-target devices, Amazon EC2, and commodity workstations.

Education

Ph.D. Mathematics (ABD/2014) – computational group & graph theory — University of Colorado Boulder

M.A. Mathematics (2010) – computational group theory, representation theory — University of Colorado Boulder

M.S. Mathematics (2006) – computational algebraic number theory — University of Vermont

B.S. Mathematics (2004) — University of Michigan-Flint

Work Experience

SGI (Silicon Graphics International) June 2013–present — Longmont, CO

Modular Infinite Storage – Kokopelli Project

- Led development and testing of SCSI Enclosure Services (SES) Python module. *Details: Backend in Cython using Linux SCSI Generic C headers and sgutils library implementation. Integration in C++ using Boost Python. Designed for environmental monitoring and enclosure services control of any SES-3 device.*
- Wrote Massive Array Idle Disk (MAID) drive power library. *Details: Written in C. Controls disk drive power at the enclosure service level.*
- Led system event logging management for the data path team. *Details: Backend in C++ with Boost. Shared library integration using Cython for simultaneous Python and C++ object oriented functionality from a single codebase.*
- Various: researched random IO cache algorithms for SSD/NVDIMM cache, automated target iSCSI port and Infiniband setup in OpenSUSE/SLES, tested Linux-HA solutions (e.g., Datera/RTSos, SLES HA, Pacemaker/Corosync).

University of Colorado Boulder September 2006–present — Boulder, CO

Graduate Student / Doctoral Candidate / Instructor of Mathematics

- Computational/algorithms research talks: 2 talks at international conferences, 2 invited talks at research institutions, 1 talk at Rocky Mountain Section Meeting of Mathematical Association of America, 29 seminar presentations at CU-Boulder and nearby universities, 7 hour-long guest lectures in CSCI6454 (graduate advanced algorithms).
- Instructor of record for 14 undergraduate courses (multivariable calculus, integral calculus, differential calculus, precalculus, college algebra, mathematics for the environment, finite mathematics, spirit and uses of mathematics).
- Instructor of record for 2 graduate courses (math teacher training, math teacher training seminar).
- Root administrator of sage.colorado.edu, a Sage Notebook server for the University of Colorado community.

Other Work

- Instructor – Mathematics, Pre-Collegiate Development Program — CU Boulder, Colorado — 2010
- LaTeX coder – The Optical Sciences Company — Anaheim, California — 2009
- Instructor – Digital Photography, Science Discovery Summer Camp — CU Boulder, Colorado — 2007, 2008
- HTML/CSS coder – The Booth Company — Boulder, CO — 2007
- Adjunct Instructor – Mathematics, Saint Michael's College — Colchester, Vermont — 2006
- Adjunct Instructor – Photography, Community College of Vermont — Newport, Vermont — 2006
- Contract Photographer – Automobile Magazine — Ann Arbor, Michigan — 2004

Personal Projects

- Big Data
  - TweetWatch (github.com/hilljb/tweetwatch) – A Python module giving access to Twitter's streaming API and providing analytics of received data. Licensed under the LGPL and developed in partnership with Room 214, a digital marketing and social media agency in Boulder, Colorado.
  - Collected data and performed analyses of social media activity during several large-scale events: 99.997% of Twitter activity related to the 2014 Sochi Olympic Games, minute-by-minute analyses of the Tour de France, 2014 Super Bowl, 2013 NCAA "March Madness," etc.
  - Won an 'Analyze Boulder' data analysis challenge by collecting geographically tagged social media references to 'beer' in 70 languages over the span of one week and providing visualizations of the collected data.
  - Presented a new randomized (Las Vegas) partition backgrack graph search algorithm at the 5th de Brún Workshop on Groups, Combinatorics, and Computing. NUI Galway, Ireland, 2011.
- Sage (www.sagemath.org) – Permutation group code development, GAP integration, notebook development and deployment (2010–present). Sage is a free open-source mathematics software system licensed under the GPL.
- PyTableaux (github.com/hilljb/pytablueax) – A Python module for LaTeX combinatorics typesetting.

Publications

- Ó Catháin, Padraig, and Hill, Jason B., "On the Classification of Hadamard Matrices of Order 4p", In preparation.
- Hill, Jason B., *On Finding Totally Real Quintic Number Fields of Minimal Signature Group Rank*, MS Thesis, University of Vermont, Burlington, 2006. Print.
- Hill, Jason B., "Salvaging *La Géométrie*", *Meteorite*, Volume 4 (2004) 17–32. Print.

Workshops

- OpenACC GPU Programming Workshop (October, 2012) – Pittsburgh Supercomputing Center
- Sage Education Days 3 (June, 2011) – University of Washington
- Sage Notebook Days 31 (June, 2011) – University of Washington
- Sage Combinat Days 20.5 (May, 2010) – Fields Institute, Toronto, Canada