Résumé

Jason B. Hill

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Technical Skills

Languages/Libs/APIs: Python, Cython, C/C++, OpenMP, MPI, Boost, udev/sysfs, SCSI Generic (SG), pandas, BASH, R

OS: Enterprise: SLES, RHEL, CentOS Personal: OpenSUSE, Debian, Ubuntu Devel: VirtualBox, Kiwi, OBS, APT

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.

Work Experience

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

Modular Infinite Storage – Data Path Team

- Led development and testing of SCSI Enclosure Services (SES) module (C/Cython backend with Python module frontend). Integrated the module with C++/BoostPython for environmental monitoring and enclosure services control on the Modular Infinite Storage scale-out storage/compute platform.
- Wrote Massive Array Idle Disk (MAID) drive power [C] library for the Kokopelli project.
- In charge of data path related system event logging for notification and system management. Wrote syslog event service [C++/Boost] and led event definition and cataloging management.
- 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 2006–2013 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.

Education

Ph.D. Mathematics (ABD) – computational group & graph theory University of Colorado Boulder
Working under Keith Kearnes and Alexander Hulpke to develop and implement parallel partition backtrack algorithms for graph isomorphism generalizations on large degree permutation representations.

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

M.S. Mathematics (2006) – computational number theory University of Vermont
Developed and implemented an algorithm to locate an instance of the smallest absolute value discriminant totally real number field of prime degree satisfying a given property. Used this algorithm to discover the first known totally real quintic number field having minimal signature group rank.

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

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