JEFFREY SCOTT YOUNG

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EDUCATION

Georgia Institute of Technology, Atlanta, GA

- PhD Thesis: "Commodity Global Address Spaces to Improve Accelerator and Memory Efficiency," Electrical and Computer Engineering, December 2013 **(GPA: 3.80/4.00)**
- Master's Thesis: "Dynamic Partitioned Global Address Spaces for High-Efficiency Computing," Electrical and Computer Engineering, 2008

Clemson University, Clemson, SC

- Bachelor of Science, Computer Engineering, 2005, Magna Cum Laude

EXPERIENCE

Research Scientist II, September 2013 – Present
School of Computer Science (CS), Georgia Institute of Technology, Atlanta, GA

- Currently leading two research efforts: 1) Mapping next-generation science codes to directive-based languages for Summit and 2) Developing advanced monitoring and scheduling capabilities for OpenStack-based GPU instances.
- Led the transfer process for moving part of the Keeneland cluster from Oak Ridge National Lab to Georgia Tech by working with vendors and mechanical engineering and CS faculty
- Provided advanced user support for the Keeneland GPU supercomputer by assisting users in debugging and optimizing their GPU-accelerated scientific codes.
    - Assisted multiple users with solutions to improve GPU utilization that led to a peak of 96% 3-GPU usage in June 2014.
    - Increased the involvement of users from Georgia Tech physics, chemistry and computer science departments on the Keeneland system.
- Advised a graduate student project to build scalable versions of the Breadth First Search algorithm using CUDA and MPI APIs. Also contributed original benchmarks to the MIC and OpenCL branches of the SHOC benchmark suite, a widely cited accelerator-based benchmarking tool.

PhD Student and Graduate Research Assistant, July 2006 – August 2013
Computer Architecture and Systems Lab, Georgia Institute of Technology, Atlanta, GA

Thesis Research

- Involved the design of commodity solutions for non-coherent global address spaces (GAS) to enhance memory and accelerator efficiency in clusters and data centers.
- Built Oncilla software infrastructure to support GAS-based data movement for GPU acceleration of large data warehousing workloads using EXTOLL and InfiniBand networks.
- Developed GAS-based memory partitioning scheme to improve memory efficiency in data centers and demonstrated effectiveness through simulation and Verilog models.

Industry Specification-Related Work with HyperTransport Consortium (HTC)

- Worked actively with industry partners to create two new specifications for memory sharing, *HyperTransport over Ethernet (HToE)* and *HyperTransport over InfiniBand*.
- Created a reference simulation model for HToE to demonstrate performance capabilities of the specification and to provide a realistic baseline for hardware designers.

SOFTWARE SKILLS

Programming: C, C++, CUDA, OpenCL, MPI, C#, Python, Bash scripting, Java, Verilog
Operating Systems: Proficient in Linux system administration, Windows
Applications: NS-3, gdb, Xilinx Vivado and Altera Quartus toolsets

PUBLICATIONS

Please see http://www.cc.gatech.edu/~jyoung9/publications.html for more information and a complete list.

Book Chapters

- Sudhakar Yalamanchili and Jeffrey Young, "System Impact of Integrated Interconnects from Attaining High-Performance Communications: A Vertical Approach," CRC Press, 2009.

Selected Conference Proceedings

- Dipanjan Sengupta, Narayanan Sundaram, Xia Zhu, Theodore L. Wilke, Jeffrey Young, Matthew Wolf and Karsten Schwan, "GraphIn: An Online High Performance Incremental Graph Processing Framework", 22nd International European Conference on Parallel and Distributed Computing (Euro-Par 2016), August 2016.
- Anshuman Goswami, Yuan Tian, Fang Zheng, Jeffrey Young, Matthew Wolf, Greg Eisenhauer, Karsten Schwan, Scott Klasky, "Landrush: Rethinking in-situ analysis for GPGPU workflows", *16th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID 2016)*, May 2016.
- M. Graham Lopez, Jeffrey Young, Jeremy S. Meredith, Philip C. Roth, Mitch Horton, Jeffrey S. Vetter, "Examining Recent Many-core Architectures and Programming Models Using SHOC", *6th International Workshop in Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS 15)*, November 2015.
- Jeffrey Young, Richard Vuduc, "The Near-Term Implications of Network Low-Power States and Next-Generation Interconnects on Power Modeling", *Workshop on Modeling and Simulation of Systems and Applications (MODSIM)*, August 2015.
- Ifrah Saeed, Jeffrey Young, Sudhakar Yalamanchili, "A portable benchmark suite for highly parallel data intensive query processing", *Proceedings of the 2nd Workshop on Parallel Programming for Analytics (PPAA)*, February 2015.
- Jeffrey Young, M. Graham Lopez, Mitch Horton, Richard Glassbrook, Jeffrey S. Vetter, "Advanced Application Support for Improved GPU Utilization on Keeneland", *The 3rd Conference of the Extreme Science and Engineering Discovery Environment (XSEDE '14)*, July 2014.
- Jeffrey Young, Se Hoon Shon, Sudhakar. Yalamanchili, Alex Merritt, Karsten Schwan, Holger Fröning, "Oncilla: A GAS Runtime for Efficient Resource Allocation and Data Movement in Accelerated Cluster," *2013 IEEE International Conference on Cluster Computing (CLUSTER)*, September 2013.
- Jeffrey Young and Sudhakar Yalamanchili, "Commodity Converged Fabrics for Global Address Spaces in Accelerator Clouds," *The 14th IEEE Conference on High-Performance Computing and Communications (HPCC)*, June, 2012.

Industry Specifications

- Emilio Billi, Jeff Young, and Brian Holden, "HyperShare Network Interface: HyperTransport™ Over InfiniBand Specification, Version 1.0," April, 2011. www.hypertransport.org.
- Jeff Young and Brian Holden, "HyperTransport™ Over Ethernet Specification, Version 1.0," November, 2010. www.hypertransport.org.

PROFESSIONAL SERVICE

- Technical Program Committee Member. *First Annual IEEE Workshop on Emerging Parallel and Distributed Runtime Systems and Middleware (IPDRM)*, 2016.
- President's Undergraduate Research Award (PURA) Faculty Reviewer, Fall 2015 and Spring 2016.
- Faculty judge at the Undergraduate Research Spring Symposium, Spring 2016
- At-large member of the Research Faculty Advisory Committee (RFAC), College of Computing, Georgia Tech, 2015-Present
- Technical Program Committee Member. *IEEE International Conference on High Performance Computing (HiPC)*, 2015.
- Technical Program Committee Member. *Workshop Series on Heterogeneous and Unconventional Cluster Architectures and Applications (HUCAA)*, 2013-2014.
- Technical Program Committee Member. *First International Workshop on Unconventional Cluster Architectures and Applications (UCAA)*, 2012.

STUDENTS ADVISED

- ***PhD:*** Kapil Argawal, Anshuman Goswami, Dipanjan Sengupta (Co-advised with Dr. Ada Gavrilovska and Dr. Matthew Wolf)
- ***MS:*** Kartikay Garg (Co-advised with Dr. Sudhakar Yalamanchili)
- ***UG:*** Chase Adams, Nick Liu

HONORS

- 2015 Research Faculty Development Grant (RFDG), College of Computing, Georgia Tech
- National Science Foundation Graduate Research Fellow, 2005 – 2008
- Clemson National Scholar (premier undergraduate, full-tuition scholarship)
- 2004 Barry M. Goldwater Scholar (national award for undergraduate research)