Abhishek Verma

Education

2008–Present **Ph.D**, *University of Illinois at Urbana-Champaign*, *3.94/4*.

2008–2010 **M.S**, *University of Illinois at Urbana-Champaign*, *3.92/4*.

2004–2008 **B. Tech**, *National Institute of Technology Tiruchirappalli*, *9.52/10*.

Doctoral thesis (expected)

Title *Performance Modeling Framework for Service Level Objective-driven MapReduce Environments*

Thesis Committee Prof. Roy H. Campbell (advisor), Prof. Indranil Gupta, Dr. Ludmila Cherkasova, Prof. William Gropp

Master thesis

Title *Scaling simple, compact and extended compact genetic algorithms using MapReduce*

Advisor Prof. Roy H. Campbell

Conference Publications

ICAC 2012 Zhuoyao Zhang, Ludmila Cherkasova, **Abhishek Verma**, and Boon Loo, **Best student paper award**, *"Performance Modeling and Optimization of Deadline-Driven Pig Programs"*.

MASCOTS 2012 **Abhishek Verma**, Ludmila Cherkasova and Roy H. Campbell, *"Two Sides of a Coin: Optimizing the Schedule of MapReduce Jobs to Minimize Their Makespan and Improve Cluster Performance"*.

NOMS 2012 **Abhishek Verma**, Ludmila Cherkasova, Vijay S. Kumar and Roy H. Campbell, *"Deadline-based Workload Management for MapReduce Environments: Pieces of the Performance Puzzle"*.

Middleware 2011 **Abhishek Verma**, Ludmila Cherkasova and Roy H. Campbell, *"Resource Provisioning Framework for MapReduce Jobs with Performance Goals"*.

Cluster 2011 **Abhishek Verma**, Ludmila Cherkasova and Roy H. Campbell, *"Play it again, SimMR!"*

LADIS 2011 **Abhishek Verma**, Ludmila Cherkasova and Roy H. Campbell, *"Performance-driven Resource Provisioning of MapReduce Jobs in the Cloud"*.

ICAC 2011 **Abhishek Verma**, Ludmila Cherkasova and Roy H. Campbell, *"ARIA: Automatic Resource Inference and Allocation for MapReduce Environments"*.

Cluster 2010 **Abhishek Verma**, Nicolas Zea, Brian Cho, Indranil Gupta and Roy H. Campbell, *"Breaking the MapReduce Stage Barrier"*.

+1 217 819 6524 • verma7@illinois.edu • verma7.com

CEC 2010 **Abhishek Verma**, Xavier Llorà, Shivaram Venkataram, David E. Goldberg and Roy H. Campbell, *"Scaling eCGA Model Building via Data-Intensive Computing"*.

ISDA 2009 **Abhishek Verma**, Xavier Llorà, David E. Goldberg and Roy H. Campbell, *"Scaling Genetic Algorithms using MapReduce"*.

Cluster 2009 Reza Farivar, **Abhishek Verma**, Ellick Chan and Roy H. Campbell. *"MITHRA: Multiple data Independent Tasks on a Heterogeneous Resource Architecture"*.

Book Chapters

Springer Science **Abhishek Verma**, Shivaram Venkataraman, Matthew Caesar, and Roy H. Campell, *"Scalable Storage for Data-intensive Computing"*. Handbook of Data-intensive Computing, Springer Science, 2011.

Springer Series of Computational Intelligence Xavier Llorà, **Abhishek Verma**, Roy H. Campbell, and David E. Goldberg, *"When Huge is Routine: Scaling Genetic Algorithms and Estimation of Distribution Algorithms via Data-Intensive Computing"*. Parallel and Distributed Computational Intelligence, SCI 269, pp. 11-41, Springer Berlin/Heidelberg, 2010.

Journal Publication

Cluster Computing **Abhishek Verma**, Brian Cho, Nicolas Zea, Indranil Gupta and Roy Campbell, *"Breaking the MapReduce Stage Barrier"*. Springer Journal of Cluster Computing, 2011.

Workshop/Work-in-progress Publications

CCOPT 2012 Zhuoyao Zhang, Ludmila Cherkasova, **Abhishek Verma** and Boon Loo, *"Optimizing Completion Time and Resource Provisioning of Pig Programs"*.

CloudCP 2012 Zhuoyao Zhang, Ludmila Cherkasova, **Abhishek Verma** and Boon Loo, *"Meeting Service Level Objectives of Pig Programs"*.

SOSP 2011 **Abhishek Verma**, Ludmila Cherkasova, Vijay S. Kumar and Roy H. Campbell, Work-in-progress report, *"Three Pieces of the MapReduce Workload Management Puzzle"*.

Patents Filed

June 2011 Ludmila Cherkasova, **Abhishek Verma**, "*Estimating performance parameter of a job having map and reduce tasks after a failure*"

May 2011 Ludmila Cherkasova, **Abhishek Verma**, "*Varying a characteristic of job profile relating to map and reduce tasks according to data size*"

April 2011 **Abhishek Verma**, Ludmila Cherkasova, "*Scheduling map and reduce tasks for jobs for execution according to performance goals*"

Feb 2011 Ludmila Cherkasova, **Abhishek Verma**, "*Determining an allocation of resources for a MapReduce job*"

Feb 2011 **Abhishek Verma**, Ludmila Cherkasova, "*Estimating a performance characteristic of a job using a performance model*"

+1 217 819 6524 • verma7@illinois.edu • verma7.com

Work Experience

August 2008–Present
Research Assistant, *University of Illinois at Urbana-Champaign*.
Research Assistant with Prof. Roy H. Campbell.

Summer 2012
Software Engineering Intern, *Google*, Mountain View.
Interned in the Cluster management team with John Wilkes. Worked on the scheduling of long running service jobs taking into account the performance and availability requirements.

May 2010–May 2012
Research Intern, *Hewlett-Packard Labs*, Palo Alto.
Interned in the Storage and Information Managements Platforms Lab with Ludmila Cherkasova and researched on MapReduce performance modeling. By profiling MapReduce jobs, we built a compact performance model representing their execution. It is used to optimize the overall infrastructure utility and achieve specified service level objectives.

Summer 2009
Software Intern, *Yahoo!*, Champaign.
Contributed to the design and development of Direct Object Repository Architecture (DORA), which is a high performance, horizontally scalable and reliable object based back-end storage. Worked on distributing the meta-data for fault tolerance and higher availability, wrote a FUSE (Filesystem in User Space) implementation and a Distributed Filesystem for Hadoop, the open source MapReduce implementation.

Summer 2007
Software Intern, *Google*, Bangalore.
Worked on Orkut, an online social networking website. It involved understanding technologies like Map Reduce and the distributed file systems, collecting data for research on Orkut and developing new features.

Professional Activities

2011-2012 Member of the graduate student council

2012 Student member of the PhD admissions review committee

2011–Present Student Member of the Association of Computing Machinery (ACM)

2011–Present Student Member of the Institute of Electrical and Electronics Engineering (IEEE)

2010–Present External Reviewer for IMC 2010, Middleware 2011, ICDCS 2012, and HotNets 2012.

Posters

SOSP 2011 Three Pieces of the MapReduce Workload Management Puzzle

Hadoop Summit 2011 ARIA: Automatic Resource Inference and Allocation for MapReduce Environments

Research Interests

Systems Distributed Systems, Cloud Computing, Operating Systems, Networks

Relevant Courses

Systems Distributed Systems, Distributed Algorithms, Operating Systems, Internetworking

Other Algorithms, Computer Architecture, Genetic Algorithms, Statistics & Probability, Digital system design, Finite Automata, Data Mining, Fuzzy Logic

+1 217 819 6524 • verma7@illinois.edu • verma7.com

Honors and Awards

2012 Best student paper award at ICAC 2012

2009 Most valuable intern award at Yahoo!

2008 First prize ($10,000) for building a web app SVid for searching and sharing videos for Topcoder's Truveo Developer challenge

2008 Institute Gold medal for the highest GPA in Computer Science, NIT Tiruchirappalli

2007 Silver medal from Alumni association for outstanding student in Computer Science, NIT Tiruchirappalli

2007 Summer Undergraduate Research Grant for Excellence (SURGE) Award in Indian Institute of Technology Kanpur

2004 Academic excellence award for being first in the university in freshman year among 600 students with a GPA of 9.85/10

Computer skills

Languages Java, C++, C, Shell Script, Python, JavaScript, Verilog, VHDL, PHP, SQL, LaTeX

OS Linux (Ubuntu, Fedora, Redhat, Suse), Solaris, Windows

Software MS Office, Adobe Photoshop, AutoCAD, Matlab, Quartus

Contact

Email verma7@illinois.edu

Phone +1 217 819 6524

Address 509 E. Stoughton Street, Apt #101, Champaign, IL. 61820.