

# JIAHUA HE

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## EDUCATION

Ph.D. student in Computer Science, University of California at San Diego Sep. 2003 – Present  
Advisor: Prof. Allan Snaveley and Prof. Henri Casanova  
M.S. in Computer Software and Theory, University of Science and Technology of China Jul. 2003  
Thesis: Performance Evaluation of SMP Cluster and Resource Management of Grid  
Advisor: Prof. Guoliang Chen (Fellow of China Academy of Sciences)  
B.S. in Computer Science and Technology, University of Science and Technology of China Jul. 2000  
Thesis: Scalability Measurement Based on Time and Space Metrics  
Advisor: Dr. Yongchang Ji and Prof. Guoliang Chen

## RESEARCH INTERESTS

- Flash-based SSD storage system
- Performance measurement, modeling, and prediction
- Static and dynamic program analysis
- Resource Management and Task/Job Scheduling
- Large-scale parallel and distributed computing

## PROFESSIONAL EXPERIENCE

Intern in Intel Corporation Summer 2006  
Advisor: Dr. Michael Frumkin

- Data flow pattern recognition of scientific numeric applications
- Compiler based control and data flow program analysis

Graduate Student Researcher Jul. 2005 – Present  
Advisor: Prof. Allan Snaveley

- Integration of flash-based SSDs into existing architecture
- Performance modeling and prediction of parallel applications
- Application benchmarks of data intensive grid

Graduate Student Researcher Sep. 2003 – Jun. 2005  
Advisor: Prof. Henri Casanova

- Task scheduling of desktop grid
- Application benchmarks of data intensive grid

Research Assistant Sep. 2000 – Jul. 2003  
Advisor: Prof. Guoliang Chen

- Resource management and task scheduling of Grid
- Parallel computational model and scalability of SMP cluster

Undergraduate Research Assistant Sep. 1999 – Aug. 2000  
Advisor: Dr. Yongchang Ji and Prof. Guoliang Chen

- Scalability analysis of parallel applications

## TEACHING EXPERIENCE

“Principles in Computer Architecture” University of California, San Diego Winter 2008  
Teaching assistant responsible for grading, office hours and projects  
“Parallel and Distributed Computing” University of Science and Technology of China Fall 2002  
Co-instructor responsible for the parallel programming part  
“Parallel Programming” University of Science and Technology of China Fall 2001

Teaching assistant responsible for grading homework and programming assignments  
“Parallel and Distributed Computing” University of Science and Technology of China      Fall 2000  
Teaching assistant responsible for grading homework and programming assignments

## **PUBLICATIONS**

1. **Jiahua He**, Arun Jagatheesan, Sandeep Gupta, Jeffrey Bennett, and Allan Snaveley. “DASH: a Recipe for a Flash-based Data Intensive Supercomputer”. To appear in the International Conference for High Performance Computing, Networking, Storage and Analysis (SC'10), New Orleans, LA, November 13-19, 2010.
2. Adrian M. Caulfield, Joel Coburn, Todor Mollov, Arup De, Ameen Akel, **Jiahua He**, Arun Jagatheesan, Rajesh K. Gupta, Allan Snaveley, and Steven Swanson. “Understanding the Impact of Emerging Non-Volatile Memories on High-Performance, IO-Intensive Computing” (**Nominated as the best paper and the best student paper**). To appear in the International Conference for High Performance Computing, Networking, Storage and Analysis (SC'10), New Orleans, LA, November 13-19, 2010.
3. **Jiahua He**, Jeffrey Bennett, and Allan Snaveley. “DASH-IO: an empirical study of flash-based IO for HPC”. In Proceedings of the 2010 TeraGrid Conference (TeraGrid'10), Pittsburgh, PA, August 2-5, 2010.
4. **Jiahua He**, Allan Snaveley, Rob F. Van der Wijngaart, and Michael A. Frumkin. “Code coverage, performance approximation and automatic recognition of idioms in scientific applications”. In Proceedings of the 17th international Symposium on High Performance Distributed Computing (HPDC'08), pp. 223-224, Boston, MA, June 23-27, 2008.
5. Omid Khalili, **Jiahua He**, Catherine Olschanowsky, Henri Casanova, and Allan Snaveley. “Measuring the Performance and Reliability of Production Computational Grids”. In Proceedings of the 7th IEEE/ACM International Conference on Grid Computing (Grid'06), pp. 293-300, Barcelona, Spain, September 28-29, 2006.
6. **Jiahua He**, Omid Khalili, and Catherine Rose Mills Olschanowsky. “Benchmarking and Measuring Grid Platforms: Software Tools and Results on the TeraGrid”. Poster in ResearchExpo'05, Jacobs School of Engineering, UCSD, Feb. 25, 2005.
7. **Jiahua He**, Guoliang Chen, and Jiulong Shan. “How to Measure Scalability of SMP Cluster”. Journal of Software, pp. 977-986, Vol.15 (7), 2004.
8. Cheng Zhong, Guoliang Chen, and **Jiahua He**. “Parallel Computing for the Longest Common Subsequences in Network Intrusion Detection System”, In Proceedings of 2004 International Conference on Machine Learning and Cybernetics, Volume 4, Page(s): 2553 – 2557, Aug. 26-29, 2004.
9. Yong Chen, Guoliang Chen, Chunsheng Li, and **Jiahua He**. “Hybrid Programming Model Research on SMP Cluster Architecture”. Mini-Micro Systems, Vol.25, No.10, pp.1763-1767, 2004.
10. Qing Ding, Guoliang Chen, Jiulong Shan, and **Jiahua He**. “A Securities Market Based Resource Allocation Model in Computational Grid Environment”. Mini-Micro Systems, Jan. 2003.
11. **Jiahua He**, Jiulong Shan. “Construction of Beowulf Cluster”. Practice of Parallel Programming, Guoliang Chen, (ed.), Higher Education Press of China, Sep. 2003.
12. **Jiahua He**, Jiulong Shan. “Scheduling and Performance Optimization of Parallel Program”. Practice of Parallel Programming, Guoliang Chen, (ed.), Higher Education Press of China, Sep. 2003.
13. **Jiahua He**, Guoliang Chen, and Jiulong Shan. “Optimal-processor-set Speedup of SMP Cluster”. In Proceedings of the 5<sup>th</sup> International Conference on Algorithms & Architectures for Parallel Processing (ICA3PP 2002), pp. 329-332, IEEE Computer Society Press, Oct. 2002.
14. **Jiahua He**, Guoliang Chen, and Qing Ding. “A Hybrid Meta-task Mapping Heuristic for Computational Grid”. International Workshop on Grid and Cooperative Computing (GCC'02), Dec. 2002.
15. Jiulong Shan, Guoliang Chen, **Jiahua He**, and Xin Chen. “Grid Society: A System View of Grid and P2P Environment”. International Workshop on Grid and Cooperative Computing (GCC02), Dec. 2002.

## **TECHNICAL SKILLS**

- Operating systems: Linux/Unix, Windows
- Programming languages: C/C++, Perl, Matlab, and Java
- Parallel programming languages: MPI and OpenMP
- Binary instrumentation tools: PIN, Dyninst and PEBIL
- Open source compiler: Open64
- Performance tools: PAPI, blktrace, IPM, Inca, PMaC prediction framework

## **LANGUAGES**

English, Chinese (Mandarin and Cantonese)

## **HONORS & AWARDS**

- 2009, IEEE/ACM SC'09 storage challenge award
- 2007-2008, Intet® university cooperation research grand
- 2003, Fellowship of UCSD
- 2003, Graduate with honor from University of Science and Technology of China
- 2002, Lenovo Group Co. Scholarship (ranked 1<sup>st</sup> of 57 students in the class)
- 2001, 3-Good (good academic achievement, good moral and good health) Student of Anhui Province
- 1999, Excellent Student Leader of University of Science and Technology of China
- 1999, Outstanding Student Scholarship (Grade 2)

## **REFERENCES**

Available on request