

# Yungang Bao

## Associate Professor

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## Visiting Postdoctoral Fellow

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## EDUCATION

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- **Ph.D. 2008**, Institute of Computing Technology, Chinese Academy of Sciences, P.R. China  
Dissertation: Performance Analysis and Optimization for Memory System  
Advisors: Prof. Jianping Fan and Prof. Mingyu Chen.
- **B.S. 2003**, Nanjing University, Nanjing, P.R.China.  
Advisor: Prof. Chunfeng Yuan

## RESEARCH INTERESTS

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Computer Architecture, Operating System, System Performance Modeling and Evaluation

## PROFESSIONAL EXPERIENCE

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- 2011.9 ~ Associate Professor, Institute of Computing Technology, Chinese Academy of Sciences
- 2010.10 ~ Visiting Postdoctoral Fellow, Department of Computer Science, Princeton University
- 2008.9 ~ 2011.9 Assistant Professor, Institute of Computing Technology, Chinese Academy of Sciences

## PROJECTS

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- **UpTCP: User-Level Pipelined TCP/IP Stack** 2010.3~  
Aim to design a user-level pipelined TCP/IP stack which is a part of PARSEC benchmark and can run on multicore platform more efficiently.
- **Memory System Design for High-Throughput Computing** 2008.10~  
Mainly focuses on studying the impact of the extreme I/O memory requests, e.g., GPU and Infiniband, on the memory system.
- **HMTT: A Hybrid Hardware/Software Memory Trace Tool** 2005.9 ~  
Design and implement a hybrid hardware/software memory trace tool which is able to collect off-chip memory traces of many real-world applications, with some important information, such as timestamp, pid, cpu-request/io-request, r/w, virt\_addr and phys\_addr.
- **SandFox: A System-Level Simulator for Reconfigurable Computer Architecture** 2003.9 ~ 2005.7  
Build a system-level simulator which can simulate a reconfigurable computer architecture (DSAG). The simulator can boot OS and run a number of parallel applications.

## PUBLICATIONS

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- Erlin Yao, Yungang Bao, Mingyu Chen, **What Hill-Marty model learn from and break through Amdahl's law?**, *Information Processing Letters (IPL)*, 2011.
- Guangming Tan, Linchuan Li, Sean Triechler, Everett Phillips, Yungang Bao, Ninghui Sun, **Fast Implementation of DGEMM on Fermi GPU**, *Proceedings of the ACM/IEEE SC2006 Conference on High*

*Performance Networking and Computing (SC)*, 2011.

- Zehan Cui, Yan Zhu, Yungang Bao and Mingyu Chen, **A Fine-grained component-level power measurement method**, *The First International Workshop on Power Measurement and Profiling (PMP 2011) in conjunction with IEEE IGCC*, 2011.
- Licheng Chen, Yongbing Huang, Yungang Bao, Onur Mutlu, Guangming Tan, Mingyu Chen, **Poster: Revisiting virtual channel memory for performance and fairness on multi-core architecture**, *Proceedings of the 25th International Conference on Supercomputing (ICS)*, 2011.
- Dan Tang, Yungang Bao, Weiwu Hu, Mingyu Chen, **DMA Cache: Using On-Chip Storage to Architecturally Separate I/O Data from CPU Data for Improving I/O Performance**, *The 16th IEEE International Symposium on High-Performance Computer Architecture (HPCA-16)*, 2010.
- Erlin Yao, Yungang Bao, Guangming Tan, Mingyu Chen, **Extending Amdahl's Law in the Multicore Era**, *ACM SIGMETRICS Performance Evaluation Review*, Volume 37 , Issue 2, September 2009.
- Qingbo Yuan, Yungang Bao, Mingyu Chen, Ninghui Sun: **A Scalability Analysis of the Symmetric Multiprocessing Architecture in Multi-Core System**. *The 2009 IEEE International Conference on Networking, Architecture, and Storage (NAS'09)*, 9-11 July 2009.
- Dan Tang, Yungang Bao, Yunji Chen, Weiwu Hu, Mingyu Chen, **Exploiting the Produce-Consume Relationship in DMA to Improve I/O Performanc**, *Workshop on The Influence of I/O on Microprocessor Architecture (IOM-2009) in conjunction with the 15th International Symposium on High-Performance Computer Architecture (HPCA-15)*, Raleigh, North Carolina, February 15, 2009.
- Yungang Bao, Mingyu Chen, Yuan Ruan, Li Liu, Jianping Fan, Qingbo Yuan, Bo Song, Jianwei Xu, **HMTT: A Platform Independent Full-System Memory Trace Monitoring System**, *International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS'08)*, Annapolis, Maryland, USA, June 2-6, 2008.
- Yungang Bao, Mingyu Chen, Jianping Fan, **A Virtual Channel Mechanism for Memory Controller Design in the Multicore Era**, *Thirteenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS'08 poster)*, Seattle, WA, USA, March 1-5, 2008.
- Li Liu, Mingyu Chen, Yungang Bao, Jianwei xu, Jianping Fan, **A Network Memory Architecture Model and Performance Analysis**, *The 2008 IEEE International Conference on Networking, Architecture, and Storage (NAS'08)*, June 12-14, 2008.
- Yuan Ruan, Yungang Bao, Mingyu Chen, Jianping Fan, **The Design and Implementation of MTT -- A Hardware-based Memory Trace Tool**, *Acta Electronica Sinica(Chinese Journal of Electronics)*, Aug. 2008 Vol.36 No.8.
- Yungang Bao, Jianwei Xu, Mingyu Chen, Jianping Fan, **Study and Development of A Novel Computer Architecture Simulator**, *Journal of System Simulation(in Chinese)*, 2007 Vol.19 No.7.
- Jianwei Xu, Mingyu Chen, Yungang Bao, **The Study on Prefetching of Remote Memory Architecture**, *Computer Science(in Chinese)*, 2005 Vol.32 No.8 P.15-20.
- Haiyun He, Yungang Bao, Chunfeng Yuan, **Semiautomatic Extract Technology of Semantic Relation of Domain-specified Concepts**, *Computer Engineering(in Chinese)*, 2005 Vol.31 No.18 P.68-70,118.

## PROFESSIONAL SERVICES

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- The First International Workshop on Power Measurement and Profiling (PMP), 2011, Program Committee
- IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA), 2011, Program Committee

- International Conference on High Performance Computing (HiPC), 2011, External Reviewer
- National Natural Science Foundation of China (NSFC), 2010, Reviewer
- IEEE Transactions on Parallel and Distributed Systems (TPDS), Reviewer
- Journal of Parallel and Distributed Computing (JPDC), Reviewer
- International Conference on Supercomputing, ICS-2010, External Reviewer
- SC'09 External Reviewer
- SC'08 External Reviewer
- HPC-Asia'05 External Reviewer

## **AWARDS**

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- **The 2<sup>nd</sup> Prize Best Paper Award,** *Institute of Computing Technology, China, 2010*
  - **The 1<sup>st</sup> Prize Best Paper Award,** *Institute of Computing Technology, China, 2008*
  - **The Excellent Student Award ,** *Chinese Academy of Sciences, China, 2006*
  - **People scholarship (The 3<sup>rd</sup> prize),** *Nanjing University, China, 2002*
  - **The Excellent Student Award (Top 5%),** *Nanjing University, China, 2002*
  - **People scholarship (The 2<sup>nd</sup> prize),** *Nanjing University, China, 2000*
  - **The Excellent Student Award (Top 6%),** *Department of Computer Science and Technology, Nanjing University, China, 2001*
  - **The Excellent Paper Award (The 3<sup>rd</sup> prize),** *Nanjing University, China, 2000*
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