

Haibo Zhang

CONTACT INFORMATION

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EDUCATION

Pennsylvania State University, PA, USA

Ph.D. Student, Computer Science and Engineering *Aug. 2014 - Present*
Advisor: Prof. Mahmut Kandemir
Overall GPA: 4.00/4.00

University of Science and Technology of China (USTC), Hefei, China

M. Eng., Computer Science and Technology *Sept. 2011 - May 2014*
Advised by Prof. Wenting Han and Prof. Hong An
Outstanding Graduate of Anhui Province and USTC, 2014
Recipient of National Merit Scholarship, 2013

University of Science and Technology of China, Hefei, China

B. Eng., Computer Science and Technology *Aug. 2007 - July 2011*
Advised by Prof. Hong An
Outstanding Graduate of USTC, 2011

RESEARCH EXPERIENCE

Mobile Platform Evaluation and Optimization

2014 - Present

- Instrumented Google Android Emulator to analyze CPU/Mem/IP behaviors in frame-based applications (including YouTube and Skype) and gaming applications (including Flappy Birds and Fruit Ninja).
- Proposed APIs to support frame-based applications to issue multiple frames at one time in Android OS. The set of APIs enables *frame burst* that saves CPU time and improves Intellectual Property (IP) utilization.
- Developing and maintaining GemDroid (A performance evaluation infrastructure for mobile SoCs).

Criticality-aware DVFS Runtime Utility

2013 - 2014

- Proposed a runtime utility in real system to detect lagging threads in multi-threaded programs and scale the frequency of lagging threads/cores by dynamic voltage and frequency scaling (DVFS).
- Implemented the runtime utility, it can effectively save application's energy consumption and help modern processors to achieve higher power-efficiency.

Program Phase Analysis and Phase Detection Techniques

2012 - 2013

- Proposed and implemented two online phase detection algorithms, a threshold based algorithm and a statistics based algorithm, to identify phases.
- Implemented a performance analysis toolkit. This toolkit helps programmers to find architecture bottlenecks of a running task in each phase.

Task Scheduling Mechanism for Dynamic Heterogeneous CMPs

2011

- Implemented a fair scheduling mechanism on dynamic heterogeneous Chip Multiprocessor, using TFlex as a simulator.
- Collected performance characteristics of SPEC2k and EEMBC on TFlex, and exploited performance variation in phases for the task mapping mechanism.

SELECTED PUBLICATIONS

[1] Nachiappan Chidambaram N., **Haibo Zhang**, Jihyun Ryoo, Niranjan Soundararajan, Anand Sivasubramaniam, Mahmut Kandemir, Chita R. Das, "VIP: Virtualizing IP Chains on Handheld Platforms", *Accepted in International Symposium on Computer Architecture (ISCA), 2015*

[2] **Haibo Zhang**, Hong An, Songtao He, et. al., "Program Phase Analysis and Phase Detection Techniques." *In Journal of Computer Science (Chinese)*, 42(1):71-74, 2015

[3] **Haibo Zhang**, Wenting Han, Feng Li, et. al., "A Criticality-Aware DVFS Runtime Utility for Optimizing Power Efficiency of Multithreaded Applications," *In proc. of Parallel & Distributed Processing Symposium Workshops (IPDPSW), 2014 IEEE International, May 2014*

[4] Tao Sun, Hong An, Tao Wang, **Haibo Zhang**, and Xiufeng Sui."CRQ-based Fair Scheduling on Composable Multicore Architectures." *In proc. of International Conference on Supercomputing (ICS12), June 2012.*

HONORS AND AWARDS	Outstanding Graduates of Anhui Province and USTC	2014
	National Merit Scholarship, Ministry of Education of China	2013
	Tencent Innovative Scholarship, Tencent	2012
	Outstanding Graduates of USTC	2011
	Outstanding Student Scholarship Grade 2, USTC	2010
	Outstanding Student Scholarship Grade 2, USTC	2009

TEACHING EXPERIENCE	Computer Organization and Design	Fall 2014
	Teaching assistant of Prof. Chita R. Das (Penn State)	
	Introduction to Computing Systems	Fall 2013
	Teaching assistant of Prof. Hong An (USTC)	
	Introduction to Computing Systems	Fall 2012
	Teaching assistant of Prof. Hong An (USTC)	
	Introduction to Computing Systems	Summer 2011
	Teaching assistant of Prof. Yale N. Patt (UT Austin)	

PROGRAMMING SKILLS	<i>Languages:</i>	skilled in C/C++, Matlab
		experienced in x86/MIPS assembly, Java, Python, Scheme
	<i>Tools and Simulators:</i>	Matlab, OriginPro, SimpleScalar, Gem5, GemDroid
	<i>Performance Analyzer:</i>	Vtune (Intel), perf (Linux), Visual Profiler (Nvidia CUDA)

REFERENCES **Mahmut T. Kandemir**
Professor, Penn State University
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