

Weixun Wang

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Research Interests

Energy-aware computing, design automation of embedded systems, computer architecture, reconfigurable architectures, real-time scheduling

Education

Ph.D. in Computer Engineering 2007 – 2011

Department of Computer & Information Science & Engineering, University of Florida

Adviser: Prof. Prabhat Mishra

GPA: 3.86/4.0

B.E. in Software Engineering 2003 – 2007

Software Institute, Nanjing University, China

GPA: 3.59/4.0, Rank 1/195

Research and Work Experience

Software Development Engineer Aug 2011 - Present

Amazon Web Service, Amazon.com

Research Assistant Sep 2007 - Aug 2011

Embedded System Lab, University of Florida

- Worked as lead researcher in several research projects: scheduling-aware cache reconfiguration, energy-aware scheduling algorithms, system-wide energy optimization, temperature- and energy-constrained scheduling, cache energy optimization in multicore systems.

Instructor/Teaching Assistant Aug 2007 - Dec 2008

Dept. of CISE, University of Florida

- Instructor for a 3-credit course CGS2531 enrolling over 100 undergrad students in Fall 2007.
- TA for CGS2531 in Spring/Summer 2008 and graduate course CDA5155 in Fall 2008.

Intern Sep 2006 - Apr 2007

SETLabs, Infosys Technologies Ltd., Mysore/Bangalore, India

- Designed and implemented an integrated online payment system for mobile devices.

Research Assistant Oct 2005 - Apr 2006

Intel Technology Lab, Nanjing University

- Migrated and optimized μ C/OS-II, a real-time operating system, on Emertxe XSBASE255 board.

Summary of Publications

- **1** book chapter, **6** journal articles, **7** referred conference papers, **1** technical report
- **1** book to appear, **2** journal articles under revision/review, **1** patent pending

Awards and Honors

Alumni Award (Fellowship for Ph.D. students), University of Florida, 2007 – 2011

ACM/SIGDA DAC Ph.D. Forum Travel Grant, 2011

Travel Grant Awards, UF CISE (2009, 2010), UF GSC (2010), DAC University Booth (2008)

International Center Achievement Award, University of Florida, 2008

1st Rank graduated student (1/195), Software Institute, Nanjing University, 2007

People Scholarship, Nanjing University, 2003 - 2004, 2005 - 2006

Orient Overseas Container Line Ltd. Scholarship, China, 2003 - 2004, 2004 - 2005

Technical Skills

Programming: C, C++, Java, Perl, Python, Verilog, Shell Scripting, SQL

Operating Systems: Linux/Unix, Solaris, Mac OS, Windows

Publications

Book

- [B1] **Weixun Wang**, Prabhat Mishra and Sanjay Ranka, "Dynamic Reconfiguration in Real-Time Systems: Energy, Performance, and Thermal Perspectives", Springer, 2012, to appear

Book Chapter

- [P1] **Weixun Wang**, Xiaoke Qin and Prabhat Mishra, "Energy-Aware Scheduling and Dynamic Reconfiguration in Real-Time Systems", Handbook of Energy-Aware and Green Computing, I. Ahmad and S. Ranka, Editors, Chapman & Hall/CRC Press, 2011

Journal Articles

- [J6] **Weixun Wang**, Sanjay Ranka and Prabhat Mishra, "Energy-Aware Dynamic Slack Allocation for Real-Time Multitasking Systems", Elsevier Sustainable Computing: Informatics and Systems (**SUSCOM**), accepted to appear, 2012
- [J5] Xiaoke Qin, **Weixun Wang** and Prabhat Mishra, "TCEC: Temperature- and Energy- Constrained Scheduling in Real-Time Multitasking Systems", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**), accepted to appear, 2012
- [J4] **Weixun Wang**, Prabhat Mishra and Ann Gordon-Ross, "Dynamic Cache Reconfiguration for Soft Real-Time Systems", ACM Transaction in Embedded Computing Systems (**TECS**), accepted to appear, 2012
- [J3] **Weixun Wang** and Prabhat Mishra, "System-Wide Leakage-Aware Energy Minimization using Dynamic Voltage Scaling and Cache Reconfiguration in Multitasking Systems", IEEE Transactions on Very Large Scale Integration Systems (**TVLSI**), Vol. 20, Issue. 5, pages 902-910, 2012
- [J2] **Weixun Wang** and Prabhat Mishra, "Dynamic Reconfiguration of Two-Level Cache Hierarchy in Real-Time Embedded Systems", ASP Journal of Low Power Electronics (**JOLPE**), Vol.7, No.1, 2011
- [J1] **Weixun Wang**, Sanjay Ranka and Prabhat Mishra, "Energy-Aware Dynamic Reconfiguration Algorithms for Real-Time Multitasking Systems", Elsevier Sustainable Computing: Informatics and Systems (**SUSCOM**), Issue. 1, pages 35-45, 2011 (Invited Paper)

Conference Papers

- [C7] **Weixun Wang**, Prabhat Mishra and Sanjay Ranka, "Dynamic Cache Reconfiguration and Partitioning for Energy Optimization in Real-Time Multi-Core Systems", IEEE/ACM Design Automation Conference (**DAC**), pages 948-953, San Diego, CA, June 2011
- [C6] **Weixun Wang**, Sanjay Ranka and Prabhat Mishra, "A General Algorithm for Energy-Aware Dynamic Reconfiguration in Multitasking Systems", IEEE International Conference on VLSI Design (**VLSI Design**), pages 334-339, Chennai, India, January 2011
- [C5] **Weixun Wang**, Xiaoke Qin and Prabhat Mishra, "Temperature- and Energy-Constrained Scheduling in Multitasking Systems: A Model Checking Approach", IEEE/ACM International Symposium on Low Power Electronics and Design (**ISLPED**), pages 85-90, Austin, TX, August 2010
- [C4] **Weixun Wang** and Prabhat Mishra, "PreDVS: Preemptive Dynamic Voltage Scaling for Real-time Systems using Approximation Scheme", IEEE/ACM Design Automation Conference (**DAC**), pages 705-710, Anaheim, CA, June 2010
- [C3] **Weixun Wang** and Prabhat Mishra, "Leakage-Aware Energy Minimization using Dynamic Voltage Scaling and Cache Reconfiguration in Real-Time Systems", IEEE International Conference on VLSI Design (**VLSI Design**), pages 357-362, Bangalore, India, January 2010
- [C2] **Weixun Wang** and Prabhat Mishra, "Dynamic Reconfiguration of Two-Level Caches in Soft Real-Time Embedded Systems", IEEE Computer Society Annual Symposium on VLSI (**ISVLSI**), pages 145-150, Tampa, FL, USA, May 2009
- [C1] **Weixun Wang**, Prabhat Mishra and Ann Gordon-Ross, "SACR: Scheduling-Aware Cache Reconfiguration for Real-Time Embedded Systems", IEEE International Conference on VLSI Design (**VLSI Design**), pages 547-552, New Delhi, India, January 2009

Under Review

- [U2] **Weixun Wang**, Prabhat Mishra and Sanjay Ranka, "Energy Optimization of Cache Hierarchy in Real-Time Multicore Systems", ACM Transactions on Design Automation of Electronic Systems (**TODAES**), under review
- [U1] **Weixun Wang** and Prabhat Mishra, "PreDVS: Preemptive Dynamic Voltage Scaling for Real-Time

Multitasking Systems", ACM Transactions on Design Automation of Electronic Systems (**TODAES**), under revision

Technical Reports

[T1] **Weixun Wang** and Prabhat Mishra, "A Partitioned Bitmask-based Technique for Lossless Seismic Data Compression", CISE Technical Report #08-452, University of Florida, 2008

Patents

[P1] Prabhat Mishra, Seok-won Seong, Kanad Basu, **Weixun Wang**, Xiaoke Qin, "Bitmask-based Code Compression Technique and Decompression Mechanism", Provisional Patent UF 12654, 2007

Professional Activities

• **Reviewer of Premier Conferences:**

IEEE/ACM Design Automation Conference (DAC)
Design Automation and Test in Europe (DATE)
Asia and South Pacific Design Automation Conference (ASP-DAC)
International Conference on VLSI Design (VLSI Design)
International Conference on Hardware/Software Codesign and System Synthesis (CODES + ISSS)
ACM Great Lakes Symposium on VLSI (GLSVLSI)
IEEE Annual Symposium on VLSI (ISVLSI)

• **Reviewer of Scholarly Journals:**

IEEE Transactions on Computers (TC)
IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)
IEEE Design and Test of Computers (D&T)
ACM Transactions on Embedded Computing Systems (TECS)
ASP Journal of Low Power Electronics (JOLPE)
Elsevier Journal of System Architecture (JSA)

• **Membership:**

Member, Institute of Electrical and Electronics Engineers (IEEE)

Professional Talks

- DAC Ph.D. Forum 2011, "*Energy-Aware Scheduling and Dynamic Reconfiguration in Real-Time Embedded Systems*", San Diego, CA, June 2011 (Top 3 among 22 accepted submissions)
- DAC 2011, "*Dynamic Cache Reconfiguration and Partitioning for Energy Optimization in Real-Time Multi-Core Systems*", San Diego, CA, June 2011
- ISLPED 2010, "*Temperature- and Energy-Constrained Scheduling in Multitasking Systems: A Model Checking Approach*", Austin, TX, August 2010
- DAC 2010, "*PreDVS: Preemptive Dynamic Voltage Scaling for Real-time Systems using Approximation Scheme*", Anaheim, CA, June 2010
- ISVLSI 2009, "*Dynamic Reconfiguration of Two-Level Caches in Soft Real-Time Embedded Systems*", Tampa, FL, May 2009
- DAC 2008, "*Dictionary-based Code Compression Techniques using Bitmasks for Embedded Systems*", Anaheim, CA, June 2008 (University Booth)