

ANDY A. HWANG

Ph.D. Student
Department of Computer Science
University of Toronto
www.cs.toronto.edu/~hwang/
hwang@cs.toronto.edu

EDUCATION

- Present **Ph.D. Student, Department of Computer Science, University of Toronto**
Advisor: Prof. Bianca Schroeder
- 2009 - 2011 **M.Sc., Department of Computer Science, University of Toronto**
Advisor: Prof. Bianca Schroeder
Research Paper: Statistical Study of DRAM Failure Characteristics
- 2004 - 2009 **B.A.Sc., Honours Computer Engineering with Mathematics Option, University of Waterloo**

EXPERIENCE

- Summer 2012 **Business Intelligence Intern**
Amazon Web Services, Seattle, WA
- Data-driven product analysis and customer profiling
- Fall 2008 **International Student Intern**
Sun Labs, Sun Microsystems Inc., Menlo Park, CA
- In-memory implementation of BigTable
 - Investigation of the data structure, properties and usage of BigTable and Hadoop HBase
- Winter 2008 **Undergraduate Research Assistant**
Faculty of Engineering, University of Waterloo
Advisor: Prof. Patrick Lam
- Investigation and optimization of Soot Java point analysis framework
- Fall 2007 **Software Developer, Imaging Algorithms Team**
Epson Canada, Toronto, ON
- Parallel programming using OpenMP and 64-bit port of training program for object detector
 - Algorithm experimentation and optimization
 - Developed software to for sample gathering and demonstration
- Winter 2007 **Compilation Technologies Build, Packaging, and Install**
IBM Toronto Lab, Toronto, ON
- Involved in build setup, planning and testing of IBM XL C/C++/Fortran compilers
 - Administrated build environments, resolved daily build issues on AIX/Linux
- Spring 2006 **Research Assistant**
Department of Electrical and Computer Engineering, University of Waterloo
Advisor: Prof. Amir K. Khandani
- Derived input estimation methods for switching implementations during runtime based on Bayesian and other statistical approaches
 - Constructed and conducted simulations, investigated practical applications

PUBLICATIONS AND REPORTS

- June 2012 **Temperature Management in Data Centers: Why some (might) like it hot**,
Nosayba El-Sayed, Ioan Stefanovici, George Amvrosiadis, [Andy A. Hwang](#), Bianca Schroeder
International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS 2012),
London, U.K. [Link](#)
- Conference **Best Paper Award**
 - Short version invited to appear in *USENIX ;login:* Magazine, Feb 2013
 - Reported in the *Communications of the ACM*, October 2012

PUBLICATIONS AND REPORTS

- March 2012 **Cosmic Rays Don't Strike Twice: Understanding the Nature of DRAM Errors and the Implications for System Design**, [Andy A. Hwang](#), Ioan Stefanovici, Bianca Schroeder
Proceedings of the Seventeenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2012), London, U.K. [Link](#)
- Short version invited to appear in *IEEE Spectrum* Magazine
 - Highlighted by *Wired*: "Your PC just crashed? Don't blame Microsoft"
- Winter 2011 **Statistical Study of DRAM Failure Characteristics**
M.Sc. Research Paper, Department of Computer Science, University of Toronto
- Winter 2008 **Investigation of Parallel Programming and 64-Bit Port of Boosting Algorithm for Object Detection Applications**
Work Term Report at Epson Canada
Submitted to the University of Waterloo (Grade: Outstanding)
- Spring 2007 **Tool for Marking Component Completion Status After Product Packaging Builds**
Work Term Report at IBM Toronto Lab
Submitted to the University of Waterloo (Grade: Very Good)
- Fall 2006 **Statistical Estimation Algorithms for Dynamic Component Implementation Selection**
Work Term Report at Department of Electrical and Computer Engineering, University of Waterloo
Submitted to the University of Waterloo (Grade: Excellent)

TEACHING

- 2013 **Software Tools and Systems Programming** (Assistant Instructor and TA)
- 2011 - 2013 **Operating Systems** (TA)
- 2009 - 2011 **Computer Organization** (Laboratory TA)

AWARDS

- 2013 **Ontario Graduate Scholarship**, Government of Ontario
- 2012 **ASPLOS/VEE Travel Grant**, ACM
- 2010 **OSDI '10 Student Grant**, USENIX
- 2009 **The Sandford Fleming Foundation Medal for Co-operative Work Term Proficiency**, Faculty of Engineering, University of Waterloo
- Winter 2008 **Undergraduate Research Assistantship**, Faculty of Engineering, University of Waterloo
- Spring 2006 **Undergraduate Student Research Award**, NSERC
- 2004 - 2006 **Dean's Honours List**, University of Waterloo
- 2004 **Engineering Entrance Scholarship**, University of Waterloo

PROJECTS

- 2011 - Present **Temperature Effects on Datacenter Performance and Reliability**
- Whole server and component benchmarking under different operating temperatures
- 2009 - Present **Memory Error Characteristics in HPC Clusters**
- Analysis of failure data from Google, Argonne National Lab, Los Alamos National Lab, SciNet
 - Explore Spatial and temporal correlation between errors; aging and degradation trends
 - Correlate memory errors with node outages and job failures
- 2012 **Online Database Consistency Checking, Dependable Systems Course Project**
- Online checking of database invariants in SQLite
- 2011 **PAX for PostgreSQL, Advanced Topics in Database Systems Course Project**
- Implement and evaluate column-wise layout within data pages for PostgreSQL
- 2008 - 2009 **Swarm Robotic Construction, 4th Year Engineering Design Project**
- Develop swarm algorithms for construction using LEGO Mindstorms NXT robots
 - Implement image processing and Bluetooth communication modules

PROJECTS

- 2008 **Digital System Engineering Course Project** (FPGA edge detector)
- 2007 **Microprocessor Systems & Interfacing Course Project** (FPGA WAV player)
- 2007 **Real Time Operating Systems Course Project** (RTOS on Motorola m68k ColdFire board)
- 2006 **Programming Languages and Translators Course Project** (Compiler frontend, AST generation)

EXTRACURRICULAR

- 2013 **Grad Visit Day Volunteer and Student Mentor**,
Department of Computer Science, University of Toronto
- 2010 - 2012 **Syems & Networking Research Pizza Lunch**, Computer Systems & Networks Group,
Department of Computer Science, University of Toronto
- 2006, 2008 **Campus Day Volunteer**, Department of Electrical and Computer Engineering, University of Waterloo
- 2004 - 2005 **Yearbook Representative, Social Committee**, Village 1 North 5, University of Waterloo
- 2003 - 2004 **Debating Club Executive**, Thornhill Secondary School, Thornhill, ON