DAVID TAM, Ph.D.

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EXPERTISE

- **Multicore Performance Specialist**
- **Computer Systems Performance Specialist**

RESEARCH & DEVELOPMENT INTERESTS

The design, implementation, performance, and optimization of:
- a) operating systems
- b) computer architecture
- c) parallel & distributed systems & applications
- d) compilers & run-time systems
- e) databases

EDUCATION

Jan 2003 -- Doctor of Philosophy in Computer Engineering,
Apr 2010   University of Toronto.
            Thesis: Operating System Management of Shared Caches on Multicore Processors

Sep 1999 -- Master of Applied Science in Computer Engineering,
Jan 2003   University of Toronto.
            Thesis: Performance Analysis and Optimization of the Hurricane File System
                      on the K42 Operating System

            Notable Graduate Courses:
            Optimizing Compilers
            Compilation Techniques for Parallel Processors
            Software Systems for Runtime Program Optimization

Sep 1995 -- Bachelor of Applied Science in Computer Engineering,
Apr 1999   University of Toronto. 3.91/4.00 cumulative GPA.
            Graduated with honors.

PUBLICATIONS

"Enhancing Operating System Support for Multicore Processors by Using Hardware Performance Monitoring", R. Azimi, *D. Tam*, L. Soares, M. Stumm, ACM Special Interest Group in Operating Systems (SIGOPS), Operating Systems Review (OSR), Special Issue on the Interaction Among the OS, the Compiler, and Multicore Processors, Apr 2009, pp. 55-65.

"RapidMRC: Approximating L2 Miss Rate Curves on Commodity Systems for Online Optimizations", *D. Tam*, R. Azimi, L. Soares, M. Stumm, Int'l Conf. on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Mar 2009, pp. 121-132.

"Reducing the Harmful Effects of Last-Level Cache Polluters with an OS-Level, Software-Only Pollute Buffer", L. Soares, *D. Tam*, M. Stumm, Int'l Symp. on Microarchitecture (MICRO), Nov 2008, pp. 258-269.

"Managing Shared L2 Caches on Multicore Systems in Software", *D. Tam*, R. Azimi, L. Soares, M. Stumm, Workshop on the Interaction Between Operating Systems and Computer Architecture (WIOSCA), Jun 2007. Held in conjunction with the Int'l Symp. on Computer Architecture (ISCA), 2007, pp. 26-33.

"Thread Clustering: Sharing-Aware Scheduling on SMP-CMP-SMT Multiprocessors", *D. Tam*, R. Azimi, M. Stumm, European Conf. in Computer Systems (EuroSys), Mar 2007, pp. 47-58.

"K42: An Infrastructure for Operating System Research", D. Da Silva, O. Krieger, R.W. Wisniewski, A. Waterland, *D. Tam*, A. Baumann, ACM Special Interest Group in Operating Systems (SIGOPS), Operating Systems Review (OSR), Vol. 40, No. 2, Apr 2006, pp. 34-42.

"Building Content-Based Publish/Subscribe Systems with Distributed Hash Tables", *D. Tam*, R. Azimi, H.-A. Jacobsen, Workshop on Databases, Information Systems and Peer-to-Peer Computing, Sep 2003; Held in conjunction with the Int'l Conf. on Very Large Data Bases (VLDB), 2003; Published in Lecture Notes in Computer Science, LNCS 2944, Springer-Verlag, 2004, pp. 138-152.

"Enabling Scalable Performance for General Purpose Workloads on Shared Memory Multiprocessors", J. Appavoo, M. Auslander, D. Da Silva, O. Krieger, M. Ostrowski, B. Rosenburg, R.W. Wisniewski, J. Xenidis, M. Stumm, B. Gamsa, R. Azimi, R. Fingas, A. Tam, *D. Tam*, IBM Research Report RC22863, Jul 2003.

PRESENTATIONS

"Enhancing Operating System Algorithms through Hardware Performance Monitoring", R. Azimi, *D. Tam*, L. Soares, M. Stumm, Workshop on Functionality of Hardware Performance Monitors, Dec 2006; Held in conjunction with the Int'l Symp. on Microarchitecture (MICRO), 2006.

"Using Hardware Counters To Improve Dynamic Compilation", *D. Tam*, J. Wu, M. Voss, University of Toronto - IBM Compiler Seminar, Feb 2004.

POSTERS

"Managing Shared Caches in Software", *D. Tam*, R. Azimi, L. Soares, M. Stumm, A. Kielstra, IBM Centers for Advanced Studies Workshop Series: Compiler Workshop, Jun 2007.

"Thread Clustering: Sharing-Aware Scheduling on SMP-CMP-SMT Multiprocessors", *D. Tam*, R. Azimi, M. Stumm, A. Kielstra, IBM Centers for Advanced Studies Conference (CASCON), Oct 2006.

"Exploiting Modern Multiprocessors: From an OS Perspective", *D. Tam*, M. Stumm, A. Kielstra, IBM Centers for Advanced Studies Workshop Series: Compiler Workshop, Jun 2006.

TECHNICAL REPORTS

"Implementing Resource Containers in K42", A. Tam, *D. Tam*, R. Azimi, Apr 2003.
"Using Hardware Counters to Improve Dynamic Compilation", *D. Tam*, J. Wu, Dec 2003.
"Improving Data Locality During Thread-Level Speculation", A. Tam, *D. Tam*, Apr 2003.
"Dynamic Voltage Scaling in Mobile Devices", *D. Tam*, W. Tsang, C. Drula, Dec 2003.
"Encoding Mathematics", *D. Tam*, Apr 2000.
"Fortran D", *D. Tam*, May 2000.
"Multilayer Routing on Multichip Modules", *D. Tam*, Dec 1999.
"Enigma Machine Java Applet", *D. Tam*, Nov 1999.

WEEKLY READING GROUP PARTICIPATION

Operating Systems Reading Group, Sep 1999 – Oct 2010. (*Manager* 2002-2007)
Compiler & Architecture Reading Group, May 2000 – Oct 2010.

TEACHING EXPERIENCE

Sep 1999 --   Teaching Assistant, ECE Dept., University of Toronto
Apr 2008   *Head Assistant*:

Winter'08 Communication & Design II	(2nd year)
Winter'07 Communication & Design II	(2nd year)
Winter'06 Communication & Design II	(2nd year)
Winter'05 Communication & Design II	(2nd year)

Assistant:

Fall '04 Digital & Computer Systems	(2nd year)
Winter'03 Operating Systems	(3rd year)
Winter'03 Digital Systems	(2nd year)
Fall '00 Systems Software	(4th year)
Fall '00 Digital & Computer Systems	(2nd year)
Winter'00 Operating Systems	(3rd year)
Fall '99 Computer Organization	(3rd year)

RELEVANT EXPERIENCE

Jun 2004 --   *Visiting Student*, IBM Centers for Advanced Studies, Toronto Software Laboratory
Mar 2009   Collaborated with compiler group on my doctoral research.

Jan 2001 --   *Co-Op Pre-Professional Software Engineer*, Advanced Operating Systems Dept.,
May 2001   IBM Thomas J. Watson Research Center, Yorktown Heights, New York
               Worked with the IBM K42 Operating System Research Group.
               Ported the Hurricane File System to the K42 Operating System.

Summers: *Technical Support*, Watco, Inc., Toronto, Ontario
1998 --   Provided computer server system installation, configuration, maintenance, and
1996   trouble-shooting support at client sites and internally.

Summers: *Multimedia & Web Designer*, Silicon Graphics Canada, Inc.
1994, 1995   Developed the very first web pages of the Canadian division.

Oct 1993 --   *Research Assistant*, Sociology Dept., University of Toronto
Jun 1995   Assisted in the analysis of telecommuting studies.

AWARDS

a) Government of Ontario Graduate Scholarship, 2004-05.
b) University of Toronto, Edward S. Rogers Sr. Dept. of ECE, Graduate Scholarship, 2003-04.
c) University of Toronto, Edward S. Rogers Sr. Dept. of ECE, Graduate Scholarship, 2003.
d) University of Toronto Master's Fellowship, 1999-2000.
e) McMaster University Merit Award Entrance Scholarship, 1995-96 (declined).

EXTRA CURRICULAR ACTIVITIES

Programs Attended:
a) Ontario Engineering Competition, 1997.
b) Canadian National Junior Achievement Conference, 1995.
c) Shad Valley Program, University of British Columbia, 1994.
d) Mentorship Program, Faculty of Arts & Science, University of Toronto, 1993-1995.
e) Computing Insights Program, University of Toronto, 1993.

Certifications:
Canadian Amateur Radio Basic Certification, 1996.

Other Interests:
Music: playing guitar (acoustic, electric, bass), piano, and sometimes drums.
Cooking.