

DAREK MIHOCKA

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SUMMARY

Over 25 years of experience in software development on multiple platforms – including development of various CPU simulators and virtual machines, reverse engineering of hardware, performance tuning, and running trade show exhibits for my old business “Emulators Inc.” I have patents and patents pending at both Microsoft and Intel. My interests are in static and run-time code optimizations, using simulation for multi-threaded debugging and tracing, dynamic binary translation, performance analysis, legacy compatibility, and virtualization.

WORK EXPERIENCE

Amazon, Seattle, WA, 2010 to 2011

- Principal Engineer in EC2 focusing on performance and correctness of the cloud infrastructure
- Developed validation and health checking tests to discover and monitor performance anomalies
- Participated in on-site customer engagement to help users of EC2 tune workloads for better performance
- Contributed customer-facing documentation to the Amazon EC2 web site and documentation

Intel Corporation, Redmond, WA and Santa Clara, CA, 2008 to 2010

- First full-time engineer hired into the newly formed Hybrid Parallel Computing group at Intel
- Designed and developed simulation tools for performance analysis and new instruction modelling
- Participated in the hardware/software co-design of future Intel processors and new instruction set extensions
- Co-inventor on five patent submissions pending in 2009 related to transactional memory

Microsoft Corporation, Redmond, WA, 2006 to 2008

- Working in the Parallel Computing Platform team researching many-core computing
- Performance analysis and tuning of code generation of latest 64-bit Windows compiler back end
- Performance analysis and tuning of ARM and PowerPC code on Windows Mobile and Xbox 360

Microsoft Corporation, Redmond, WA, 2005 to 2006

- Entertainment and Devices Division, Xbox 360 development
- Responsible for fast accurate emulation of Pentium III on 64-bit PowerPC processor
- Patents pending and U.S. patent #7,752,028 granted relating to simulation on PowerPC processors

Microsoft Research, Redmond, WA, 2001 to 2005

- Lead developer on “Nirvana” research project, a dynamic recompilation instrumentation framework
- Participated in incubation work for emulation related project on Xbox 360
- Maintained Vulcan and BBT (Microsoft’s static code instrumentation and optimization tools)
- Co-authored paper on Nirvana and Time Travel Debugging technology which was presented at VEE 2006
- Co-inventor on U.S. patent #7,620,938 for Time Travel Debugging technology

Emulators Inc., Bellevue, WA, 1997 to 2001 full time, side business 1988 to present

- Founded company to provide products related to Macintosh-PC cross-platform operability
- Designed, developed, and shipped the “SoftMac” Apple Macintosh emulator for Windows in under two years
- Negotiated distribution deals of SoftMac with resellers in Japan, Europe, and North America
- Learned about real world users and their frustration with bloated and under-documented software
- Managed and coordinated company exhibits at Macworld, Comdex, PC Expo, and CeBIT trade shows
- Customers include Microsoft, school boards, and thousands of Apple and Atari end-users
- Blogger since 2000, helping real-world PC users with their problems, posting hardware reviews and analysis

Microsoft Corporation, Redmond, WA, 1990 to 1997

- Full-time SDE in the Applications and Languages Divisions, focusing on performance issues and code quality
- Contributed to Visual C++ 4.x and 5.0 back end code generation optimizations producing 10% smaller code
- Boot-time and performance optimization work on Office 95 and 97, Mac Office 98
- Also worked on Works for Windows 2.0, PC Works 3.0, POSIX runtimes in NT

Microsoft Corporation, Redmond, WA, 1987, 1989

- Interned in the Applications Division on projects such as Multiplan for OS/2 and PowerPoint 2.0
- Responsibilities included writing specifications for new features, coding, testing, and debugging
- Used cross-platform development tools hosted on XENIX/386 and OS/2

Student, University of Waterloo, Waterloo, Ontario, Canada, 1985 to 1990

- Founded my company, "Branch Always Software" in 1988, later renamed to "Emulators Inc."
- Developed freeware and shareware tools for the Atari ST, including Atari 800 and Apple II emulators
- Developed the commercial "Quick ST" software accelerator for Atari's GEM/TOS operating system
- Authored numerous computer magazine articles, starting with June 1985 issue of "Antic" magazine

EDUCATION

University of Waterloo, Waterloo, Ont., 1985 to 1990

- B.A. in Computer Engineering (similar to Electrical Engineering with Computer Science electives)
- Awarded Engineering Faculty Special Entrance Scholarship (one of top 8 scholarships per year)
- Ranked in top 16 students nationwide in various Canadian math and physics high school contests

SKILLS AND INTERESTS

- Proficient in C/C++ as well as x86/AMD64/Intel64, PowerPC, 680x0, and 6502 assembly languages
- Windows Vista/XP/2000/NT, Windows 9x/Me, MS-DOS, Mac OS, GEM/TOS operating systems
- Strong interests in mathematics, physics, electronics, and microprocessor architecture
- Public presentations, press interviews on television, radio, and magazines
- Authored several computer magazine articles since 1985, online hardware reviews, and years of blogging

PUBLICATIONS

"Fast Microcode Interpretation with Transactional Commit/Abort", AMAS-BT workshop at ISCA, San Jose, June 2011
<http://amas-bt.cs.virginia.edu/2011proceedings/amasbt2011-p3.pdf>

"Proposal for Hardware-Assisted Arithmetic Overflow Detection", WISH workshop at CGO, Toronto, April 2010
http://www.emulators.com/docs/LazyOverflowDetect_Final.pdf

"Virtualization without Direct Execution", AMAS-BT workshop at ISCA 2008, Beijing, June 2008
<http://amas-bt.cs.virginia.edu/2008proceedings/AmasBT2008.pdf>

"Framework for Instruction-level Tracing and Analysis", VEE 2006, Ottawa, June 2006
http://www.usenix.org/events/vee06/full_papers/p154-bhansali.pdf

Other publications, interviews, blog postings, and citations:

<http://www.cs.virginia.edu/kim/docs/wish11zsim.pdf>

<http://research.microsoft.com/en-us/um/people/antr/MS/VigilanteSOSP.pdf>

<http://www.macworld.com/news/2001/07/03/emulation/index.php>

http://www.emulators.com/docs/pentium_1.htm

http://www.theregister.co.uk/2001/01/10/pentium_4_high_risk_strategy/

<http://archives.cnn.com/2001/TECH/computing/01/10/windows.mac.cohabit.idg/index.html>

<http://www.atarimagazines.com/v4n2/GUP.html>