

## 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.” (<http://www.emulators.com/>). I have numerous patents currently pending at both Microsoft and Intel. I have understanding of performance and hardware bottlenecks, operating system limitations, and cross-platform issues. I am interested in the growing fields of 64-bit and efficient many-core computing, and wish to apply the use of simulation for practical uses such as multi-threaded debugging, dynamic optimizations, performance analysis, legacy compatibility, virtualization, and security.

## WORK EXPERIENCE

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

- 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

- Developer Division, 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
- Several individual and shared patents pending relating to simulation on PowerPC processors

Microsoft Corporation, Redmond, WA, 2004 to 2005

- Windows Core OS Division, working with Nirvana technology on Windows Vista
- Co-wrote paper on Nirvana and Time Travel Debugging technology which was presented at VEE 2006
- Pending shared patent for Time Travel Debugging technology

Microsoft Research, Redmond, WA, 2001 to 2004

- 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)

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 typical 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

Bell Northern Research, Toronto, Ontario, Canada., 1989

- Developed software for an Automatic Call Distribution (ACD) system running on XENIX/386

NCR, Waterloo, Ontario, Canada, 1988

- Student engineer, Optical Character Recognition (OCR) and image processing software

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, INTERESTS, AND PUBLICATIONS

- 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 magazine articles since 1985, online hardware reviews, and years of blogging

ACM/IEEE CGO 2010 workshop paper presented in Toronto on fast integer overflow detection:

paper: [http://www.emulators.com/docs/LazyOverflowDetect\\_Final.pdf](http://www.emulators.com/docs/LazyOverflowDetect_Final.pdf)

slides: [http://www.emulators.com/docs/Mihocka-Troeger-CGO-WISH-2010\\_final.pdf](http://www.emulators.com/docs/Mihocka-Troeger-CGO-WISH-2010_final.pdf)

ACM/IEEE ISCA 2008 workshop paper presented in Beijing on portable virtualization across different host CPUs:

paper: [http://www.emulators.com/docs/VirtNoJit\\_Paper.pdf](http://www.emulators.com/docs/VirtNoJit_Paper.pdf)

slides: [http://www.emulators.com/docs/VirtNoJit\\_Slides.pdf](http://www.emulators.com/docs/VirtNoJit_Slides.pdf)

Microsoft Research "Time Travel Debugging" paper from VEE 2006 describing Nirvana/iDNA:

[http://www.usenix.org/events/vee06/full\\_papers/p154-bhansali.pdf](http://www.usenix.org/events/vee06/full_papers/p154-bhansali.pdf)

Worm Containment paper that uses the Nirvana technology:

<http://research.microsoft.com/pubs/66830/vigilantesosp.pdf>

My prediction from 2001 that fast cheap x86 based PCs will be ideal for running Mac OS:

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

My analysis of the then newly released Pentium 4 processor and related press coverage:

[http://www.emulators.com/docs/pentium\\_1.htm](http://www.emulators.com/docs/pentium_1.htm)

[http://www.theregister.co.uk/2001/01/10/pentium\\_4\\_high\\_risk\\_strategy/](http://www.theregister.co.uk/2001/01/10/pentium_4_high_risk_strategy/)

CNN coverage of my old company and products:

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

My first published computer magazine article from 1985 when I was still a high school student:

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