

Curriculum Vitae of **Michael Barr**

Updated April 3, 2009

Summary

Electrical engineer with formal training in computer science and over a decade of hands-on software design and implementation experience. Internationally recognized as an expert in the area of real-time embedded software design and admitted as an expert witness in embedded systems and satellite television piracy in U.S. courts.

- *Languages:* C, C++, Java, Visual Basic, assembly
- *Processors:* Microchip PIC, Atmel AVR, Intel 80x86, Motorola 68k, PowerPC
- *Operating Systems:* μ C/OS-II, VxWorks, Microsoft Windows, DOS, Linux
- *Busses/Protocols:* TCP/IP, UDP/IP, CEBus, ISDN

Present Activities

Netrino, *President/CTO*, Jan 1999 - present

Executive management for an engineering services firm specializing in the design and development of custom embedded computers; clients range from small startups to Fortune 100 firms

Responsible for setting corporate strategy, overseeing marketing strategy and business development, and managing revenue and profit growth; the company has been profitable in each year of operation

Created the company's professional training curriculum and courses for embedded software developers

Performed engineering design and consulting services for clients in industries ranging from consumer electronics to medical products

Embedded Systems Design, *Technical Editor/Editor-in-Chief/Columnist*, Feb 1999 - present

Technical consultant to the current editor-in-chief of this monthly journal with over 50,000 subscribers

For more than three and a half years, served as editor-in-chief, supervising editorial staff members and working with authors and columnists to refine their technical content to fit subscriber needs

Author of dozens of articles and columns

Embedded Systems Conference, *Advisory Board Member/Track Chair*, Jan 2001 – present

Provided industry viewpoint and observations on emerging and ongoing trends in the marketplace

Suggested possible new course and panel topics and speakers for future events

Past Experiences

University of Maryland, *Adjunct Faculty*, Sep 2000 – Dec 2002

Taught operating systems design to graduate and undergraduate electrical engineering students

Designed and supervised independent study projects related to real-time embedded software development

PropHead Development, *Software Architect*, Oct 1998 – Jan 1999

Defined the embedded software architecture and detailed design for a satellite TV set-top box joint venture between America Online and Hughes Network Systems

TSI TelSys, *Principal Software Engineer*, Jun 1997 – Sep 1998

Wrote software in Java to convert any valid Java program into a synthesizable Verilog hardware design

Developed Solaris and Windows NT device drivers for a PCI-based reconfigurable coprocessor card

Led the effort to produce a development and prototyping platform for users of the microSPARC-IIep processor

Designed and implemented a set of development tools for designers of applications based on reconfigurable computing technology

Wrote an InstallShield application for distributing the above software to computers running Windows 95/98/NT

Hughes Network Systems, *Software Engineer*, Jun 1994 – May 1996

Developed a Windows NT device driver for a high-speed I/O device on a PCI card

Successfully led a short-term, three-person project to resolve a software problem that had been plaguing internally developed test equipment for more than six-months

Coordinated with engineers at Hitachi Japan to design the middleware interface between products over a CEBus network and implemented the same for a high-volume consumer electronics product

Developed an implementation of the UDP/IP protocol stack that included BOOTP, TFTP, and ARP client software, requiring just 8-kilobytes of memory--a ten-fold decrease over the commercial alternative

Ported the VRTX and VxWorks board support packages to multiple custom hardware platforms

Affiliations

Phi Kappa Phi National Honor Society

Institute for Electrical and Electronic Engineering, *Member*

Education

Management

Master of Business Administration. University of Maryland, Dec 2006

Engineering

Master of Science in Electrical Engineering. University of Maryland, May 1997

Bachelor of Science in Electrical Engineering. University of Maryland, May 1994

Publications

Books

Barr, Michael. Programming Embedded Systems in C and C++. O'Reilly & Associates, 1999.

Ganssle, Jack and Michael Barr. Embedded Systems Dictionary. CMP Books, 2003.

Barr, Michael and Anthony Massa. Programming Embedded Systems with C and GNU Development Tools. O'Reilly & Associates, 2006.

Barr, Michael. Embedded C Coding Standard. Netrino, 2009.

Articles and Papers

Barr, Michael and Brian Frank. "Java: Too Much for Your System?," *Embedded Systems Programming*, May 1997.

Barr, Michael. "Controlling Run-Time Reconfigurable Hardware Designs with Java," DesignCon, Jan 1998.

Barr, Michael and Jason Steinhorn. "Kaffe, Anyone? Implementing a Java Virtual Machine," *Embedded Systems Programming*, Feb 1998.

Barr, Michael. "A Reconfigurable Computing Primer," *Multimedia Systems Design*, Sep 1998.

Barr, Michael. "A Free Java Virtual Machine for Embedded Systems," Embedded Systems Conference, Nov 1998.

Barr, Michael. "Choosing a Compiler: The Little Things," *Embedded Systems Programming*, May 1999.

Barr, Michael. "Programmable Logic: What's it to Ya?," *Embedded Systems Programming*, Jun 1999.

- Barr, Michael. "Architecting Embedded Systems for Add-on Software," *Embedded Systems Programming*, Sep 1999.
- Barr, Michael. "IrDA and Bluetooth," *Embedded Systems Programming*, Oct 1999.
- Barr, Michael. "Checksums," *Embedded Systems Programming*, Nov 1999.
- Barr, Michael. "Cyclic Redundancy Codes, Part 1," *Embedded Systems Programming*, Dec 1999.
- Barr, Michael. "Cyclic Redundancy Codes, Part 2," *Embedded Systems Programming*, Jan 2000.
- Barr, Michael. "Virtual Serial Ports," *Embedded Systems Programming*, Feb 2000.
- Barr, Michael. "Language Lessons," *Embedded Systems Programming*, Mar 2000.
- Barr, Michael. "TCP/IP or Not TCP/IP?," *Embedded Systems Programming*, Apr 2000.
- Barr, Michael. "Calibration," *Embedded Systems Programming*, May 2000.
- Barr, Michael. "MAC Daddy," *Embedded Systems Programming*, Jun 2000.
- Barr, Michael. "Address Resolution Protocol," *Embedded Systems Programming*, Jul 2000.
- Barr, Michael. "Software-Based Memory Testing," *Embedded Systems Programming*, Jul 2000.
- Barr, Michael. "Internet Working," *Embedded Systems Programming*, Sep 2000.
- Barr, Michael. "Introduction to Memory Types," *Embedded Systems Programming*, May 2001.
- Barr, Michael. "K Virtual Machine," *Embedded Systems Conference*, Jul 2001.
- Barr, Michael. "Java Technology Overview," *Embedded Systems Conference*, Sep 2001.
- Barr, Michael. "Introduction to Pulse Width Modulation," *Embedded Systems Programming*, Sep 2001.
- Barr, Michael. "Introduction to Watchdog Timers," *Embedded Systems Programming*, Oct 2001.
- Brown, Chris and Michael Barr. "Introduction to Endianness," *Embedded Systems Programming*, Jan 2002.
- Barr, Michael. "Embedded Programming 101," *Embedded Systems Conference*, Mar 2002.
- Barr, Michael. "Java 2 Micro Edition," *Embedded Systems Conference*, Mar 2002.
- Barr, Michael. "Preparing Your System for Java," *Embedded Systems Conference*, Mar 2002.
- Stewart, David and Michael Barr. "Introduction to Rate Monotonic Scheduling," *Embedded Systems Programming*, Mar 2002.
- Kalinsky, David and Michael Barr. "Introduction to Priority Inversion," *Embedded Systems Programming*, Apr 2002.
- Barr, Michael. "Toward a Smaller Java," *Embedded Systems Programming*, Jun 2002.

- Beal, David and Michael Barr. "Embedded Linux and the Law," *Embedded Systems Programming*, Aug 2002.
- Barr, Michael. "Introduction to Closed-Loop Control," *Embedded Systems Programming*, Aug 2002.
- Ball, Stuart and Michael Barr. "Introduction to Counter/Timer Hardware," *Embedded Systems Programming*, Sep 2002.
- Wagner, Brian and Michael Barr. "Introduction to Digital Filters," *Embedded Systems Programming*, Dec 2002.
- Barr, Michael. "Choosing a Real-Time Operating System," *Embedded Systems Programming*, Jan 2003.
- Berger, Arnold and Michael Barr. "Introduction to On-Chip Debug," *Embedded Systems Programming*, Mar 2003.
- Labrosse, Jean and Michael Barr. "Introduction to Preemptive Multitasking," *Embedded Systems Programming*, Apr 2003.
- Ball, Stuart and Michael Barr. "Introduction to Timer-Based Measurement," *Embedded Systems Programming*, Aug 2003.
- Barr, Michael. "Fixed-Width Integers in C, C++, and C99," *Embedded Systems Programming*, Feb 2004.
- Barr, Michael. "Multitasking Alternatives and the Perils of Preemption," *Embedded.com*, Sep 2006.
- Barr, Michael. "Don't Believe Everything You Hear About RTOSes," *Embedded.com*, Oct 2008.
- Barr, Michael. "Bug-Killing Standards for Firmware Coding," *Embedded Systems Programming*, Apr 2009.
- Samek, Miro and Michael Barr. "Event-Driven Programming," *Embedded Systems Conference*, Apr 2009.
- Barr, Michael. "Zero Bugs...Period: Embedded C Coding Standards," *Embedded Systems Conference*, Apr 2009.
- Barr, Michael. "How to Assign Priorities to RTOS Tasks (and Why it Matters)," *Embedded Systems Conference*, Apr 2009.

Expert Witness Appearances

Jury Trials

- DirecTV v. Frye, et. al., U.S. District Court for South Carolina, 22 Jan 2004
- DirecTV v. Crespin, U.S. District Court for Colorado, 28 Jun 2004
- DirecTV v. Medina, U.S. District Court for South Carolina, 26 Jul 2004
- DirecTV v. Murray, et. al., U.S. District Court for South Carolina, 11 Aug 2004
- Echostar Satellite v. NDS Group, U.S. District Court for Southern Central California, 1 May 2008

Bench Trials

DirecTV v. Escalona, U.S. District Court for Southern Florida, 2 Feb 2004

DirecTV v. Craft, U.S. District Court for Northern Florida, 6 Apr 2004

DirecTV v. Schaffer, U.S. District Court for Southern Alabama, 17 Jun 2004

DirecTV v. Walsh, U.S. District Court for Middle Pennsylvania, 30 Aug 2004

DirecTV v. Taylor, U.S. District Court for Western Tennessee, 29 Sep 2004

DirecTV v. Norris, U.S. District Court for Southern West Virginia, 25 Jan 2005

DirecTV v. Toler, U.S. District Court for Southern West Virginia, 25 Jan 2005

DirecTV v. Farley, U.S. District Court for Southern West Virginia, 15 Feb 2005

DirecTV v. Karpinsky, U.S. Bankruptcy Court for Eastern Michigan, 25 Apr 2005

Evidentiary Hearings

DirecTV v. Andino, et. al., U.S. District Court for Central Florida, 27 Oct 2003

DirecTV v. Nguyen, U.S. District Court for Central Florida, 7 Nov 2003

DirecTV v. Iwan, U.S. District Court for Central Florida, 7 Nov 2003

DirecTV v. Emfinger, U.S. District Court for Central Florida, 7 Nov 2003

DirecTV v. Cabral, U.S. District Court for New Mexico, 30 Apr 2004

DirecTV v. Kubicek, et. al., U.S. District Court for Western Louisiana, 22 Jun 2004

DirecTV v. Fayard, et. al., U.S. District Court for Middle Louisiana, 1 Dec 2004

Depositions

DirecTV v. Laroe, et. al., U.S. District Court for Colorado, 13 Feb 2004

DirecTV v. Denton, et. al., U.S. District Court for Northern Georgia, 26 May 2004

DirecTV v. Stoner, et. al., U.S. District Court for Eastern North Carolina, 27 May 2004

Echostar Satellite v. NDS Group, U.S. District Court for Southern Central California, 13 Sep 2007

Echostar Satellite v. NDS Group, U.S. District Court for Southern Central California, 1 May 2008

Patents and Awards

Patents Awarded

Perret, Joseph and Michael Barr. *Method of Calibrating a Brake System for Stationary Equipment and Apparatus for Doing the Same*. U.S. Patent #6,976,562

Zeidman, Bob, Dan Hafeman, and Michael Barr. *Method and Apparatus for Synthesizing a Hardware System from a Software Description*. U.S. Patent #7,210,116

Patents Pending

Zeidman, Bob and Michael Barr. *Software Tool for Automatically Protecting Shared Resources Within Software Source Code*.

Awards

Outstanding Paper Award, DesignCon, 1998.