

Andrew Duncan

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OBJECTIVE

A Senior Engineering position that lets me apply my diverse background in Computer Science, Math, and Electrical Engineering. I am a very cross-discipline scientist, and have tried not to lose track of the forest by specializing on trees. I have very strong communication skills, having published web articles and a book with O'Reilly and Associates, administering a blog for a Santa Barbara running group, and teaching Math, Physics, and Computer Science at the secondary, junior college, and university levels. My experience with development tools is very broad, and I am as much at home debugging at the bit level with a commandline as with high-level IDEs.

EDUCATION

1996 - Ph.D. program, Computer Science, **University of California, Santa Barbara.**

1999 Topic: Virtual Machine design. Advanced to candidacy; currently on (apparently permanent) leave.

1989 - M.A. Pure Mathematics, **University of California, Santa Cruz.**

1991 Topic: Algebra of music theory.

1978 - B.S. Electrical Engineering, **California Institute of Technology.**

1983 Focus: Audio electronics.

EMPLOYMENT

College Instructor 2010	University of California, Santa Barbara, Santa Barbara CA. Taught course in computer architecture. Logic gates, flip-flops, sequential circuits, feedback and recursion, CPU design, MIPS assembly programming.
Software Engineer 2010	Sonos, Inc, Santa Barbara CA. Wrote C++ and Octave code for digital filtering of loudspeaker signal. Wrote JavaScript code for JSON-based web interface to loudspeaker equalization and crossover.
Software Engineer 2007-2008	Citrix Online, Santa Barbara CA. Development of MacOS code for networking applications (GoToMyPC/GoToMeeting). Integration of C++ code for both Win32 and Mac OS X platforms, in-place upgrading code, memory management, and debugging. Registered patent for algorithm to do networked document markup.
College Instructor 2006	University of California, Santa Barbara, Santa Barbara CA. Taught operating systems theory. Systems programming, threads & processes, scheduling, deadlocks, memory systems, input-output, and security.
College	Santa Barbara City College, Santa Barbara CA. Taught algebra.

Instructor 2006	Polynomials, rational functions, exponentials, systems of equations, and matrices.
High School Teacher 2004 - 2005	Dos Pueblos High School, Goleta CA. Taught Physics, Conceptual Physics, and Sheltered Physics (for students whose first language is not English). Kinematics, dynamics, energy, heat, sound, light, and electricity.
Software Engineer 1999 - 2004	Expertcity, (now Citrix Online) Santa Barbara CA. Wrote network software and Win32 application code. Bridge code for integration with Siebel database. C++ Libraries for internationalization, threading, memory management, and unit testing.
Sr. Software Engineer 1992 - 1996	Philips Media, Los Angeles CA. Wrote software for parsing and debugging MPEG-1 digital video streams. Code to synchronize MIDI-based audio with digital video playback. Designed multimedia scripting language and implemented compiler, interpreter, and full documentation.
Chief Engineer 1990 - 1992	MAMA Foundation, Studio City, CA. Recorded, edited, and mixed nine jazz albums. Wrote software for digital filtering of audio. Debugged and repaired recording equipment. Set up database and accounting software for small business.
Engineering Consultant 1989 - 1990	Cerwin-Vega!, Inc., Simi Valley CA. Wrote software for measurement of Thiele-Small parameters for loudspeaker components and design of magnetic circuits.
Engineering Consultant 1987 - 1989	E-Mu Systems, Inc., Scotts Valley CA. Wrote software for sample-rate conversion and pitch-shifting of digital signals for electronic musical instruments.
Software Engineer 1984 - 1986	Cerwin-Vega!, Inc., Arleta CA. Wrote software for spectral and cepstral analysis of digital signals. Designed amplifier for electric instruments.
High School Teacher 1983 - 1984	John Muir High School, Marshall High School, Pasadena CA. Taught classes in physics and tutored in calculus.

PUBLICATIONS & AWARDS

- 2003 *Objective-C: Dynamite!* Explaining the code behind Apple's OS X.
<http://www.macdevcenter.com/pub/a/mac/2003/04/28/objective-c.html>
- 2002 *Objective-C Pocket Handbook*, O'Reilly & Associates. Complete description of the Objective-C programming language.
- 1999 Outstanding Graduate Student, UCSB Computer Science
- 1998 *Gear Ratios*. A comprehensive discussion of bicycle gears.
<http://www.andrewduncan.ws/misc/gears.html>
- 1994 *Who's Who in Science and Engineering*
- 1993 *Who's Who in the West*

- 1992 Development of the "Z-Board" MIDI controller
<http://www.starrlabs.com>
- 1991 Comin' At Ya, The Andy Simpkins Quintet: Recording & Mixing Engineer
- 1991 "Combinatorial Music Theory," *J. Audio Eng. Soc.*, Vol.39, No. 6, pp. 427-448,
(1991 June). <http://www.andrewduncan.ws/cmt>
- 1990 Review Board, *Journal of the Audio Engineering Society*
- 1990 Windows, The Dave Mackay Trio: Custom DSP
- 1989 Audio Engineering Society Publication Award, "The Analytic Impulse",
Best paper in the years 1987-88 by an author under 30 years of age.
<http://www.aes.org/e-lib/browse.cfm?elib=5153>
- 1988 "The Analytic Impulse", *J. Audio Eng. Soc.*, Vol. 36, No. 5, pp.315-327, (1988 May).
<http://www.andrewduncan.ws/air>

COMPUTER LANGUAGES & ENVIRONMENTS

BASIC, FORTRAN, Object Pascal, C++, Objective C, 6502, 680x0, MacApp, Cocoa, UNIX,
Win32, SQL, HTML, CSS, XML, Eiffel, Perl, HyperCard, AppleScript, Max, Prograph, ScriptX,
SUIF, ML, Java, JavaScript, Python, Ruby, JVM .

References, sample code and compiled apps are available on request.