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PROFESSIONAL SUMMARY

I am a very cross-discipline scientist, and have tried not to lose track of the forest by specializing on trees. My roots are in the physical sciences: my first focus was audio engineering. I have evolved from an engineer who writes software to a software engineer. I have very strong communication and teaching skills, having published web articles and a book with O'Reilly and Associates, and teaching Math, Physics, and Computer Science at the secondary, junior college, and university levels. My experience with software development tools is very broad, and I am as much at home debugging at the bit level with a command line as with high-level IDEs.

The links in the Publications and Awards section below provide examples of coding and pedagogy.

EDUCATION

1996 - 1999 Ph.D. program, Computer Science, **University of California, Santa Barbara.** Topic: Virtual Machine design. Advanced to candidacy; currently on (apparently permanent) leave.

1989 - 1991 M.A. Pure Mathematics, **University of California, Santa Cruz**. Topic: Algebra of music theory.

1978 - 1983 B.S. Electrical Engineering, **California Institute of Technology**. Focus: Audio electronics.

EMPLOYMENT

Lecturer 2013	**Napa Valley College, Napa CA**. Taught college algebra. Exponents & logarithms, geometry and trigonometry.
Web Programmer 2011-12	**University of California, Santa Barbara, Santa Barbara CA**. Wrote software for web-based control of virtualization (KVM) management. Yii framework, using PHP and JavaScript to call libvirt and talk to MySQL database.
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 2006-11	**University of California, Santa Barbara, Santa Barbara CA**. Taught operating systems and computer architecture . Systems programming, threads & processes, concurrency, logic gates, flip-flops, sequential circuits, CPU design, MIPS assembly programming.
College Instructor 2006	**Santa Barbara City College, Santa Barbara CA**. Taught algebra. 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

2013 *ana-grabr*. An iOS mobile app for interactively finding anagrams.
http://andrewduncan.net/ana-grabr
2013 *gear-grafr*. An iOS mobile app for plotting bicycle gear ratios.
http://andrewduncan.net/gear-grafr
2012 *3d Pages.* Pages demonstrating *ab initio* 3d perspective library.
http://andrewduncan.net/3d
2012 *Golden Ratio Pages.* Exploring famous number ϕ.
http://andrewduncan.net/goldenratio
2012 *Chaos Pages.* Exploring iterated systems and chaos.
http://andrewduncan.net/chaos
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
1994 *Who's Who in Science and Engineering*
1993 *Who's Who in the West*
1992 Development of the "Z-Board" MIDI controller
http://andrewduncan.net/zboard
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://andrewduncan.net/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://andrewduncan.net/air

COMPUTER LANGUAGES & ENVIRONMENTS

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

References, sample code and compiled apps are available on request. The above URLs provide working code samples. All code is unobfuscated and visible.