

**David A. Jaffe**  
**Audio and Music Engineer/Manager**  
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**SUMMARY OF EXPERTISE**

Software architect, manager and implementer of large projects, from conception to delivery, including documentation, QA and customer support. Works well under deadlines, has inspiring positive style, easily earns respect of colleagues, adaptable to new concepts and ideas. Knows how to maximize talents of a particular group, demonstrated ability to work effectively with teams remotely and in person in Asia, India, Australia, and Europe.

Expert in audio system design, including architectures based on client-server, co-processor, multi-DSP, SDK and plug-in approaches, integrated with GUI tools. Pioneer in physical modeling sound synthesis. Deep understanding of issues in computer music and audio. Extensive publications and public speaking experience, with strong ties to academic resources. Accomplished classical/computer music composer with international reputation.

Application, system, embedded and DSP programming, object-oriented software design, real-time programming, multiprocessor systems, music languages, music recognition, multi-threaded/interrupt-level programming, multiplatform development. Familiarity with most music and audio software.

**EDUCATION**

Doctor of Musical Arts and Master of Arts degrees, Stanford University Center for Computer Research in Music and Acoustics (CCRMA) (1984). Bachelor of Arts degree in Music and Math, Bennington College (1979).

**SELECTED EXPERIENCE**

- Senior Scientist/Software Engineer at Universal Audio, Inc. (2007-present), developing emulations of classic analog studio gear. Architected/developed firmware, libraries and drivers for UAD-2, a PCIe platform for deploying plug-ins, as well as Apollo, a 1394/Thunderbolt audio interface with DSP.
- Senior Software Engineer, chief architect and project lead/manager at Analog Devices' Audio Rendering Technology Center (2001-2006). Created the SoundMAX synthesis engine (shipped on 80 million PCs) and VisualAudio, a visual programming environment for embedded audio products. Worked closely with the Director of Engineering to manage teams and create strategy. Supported key automotive, AVR and pro-audio customers; closely coordinated with an Indian team, and groups in Australia, Asia and Europe.
- Founder and Distinguished Engineer at Staccato Systems, Inc. (1997-2000), serving as chief architect and contributor for a multi-platform sound synthesis/processing server/SDK for music and games. Staccato Systems was acquired by Analog Devices in 2001.
- Senior Scientist at Virtual Music Entertainment, Inc. (1994-1997), designing and programming sound for multiplatform music-based performance games.
- Consultant for the Stanford University Office of Technology Licensing "Sondius" program (1992-1996), creating physical modeling synthesis software and algorithms.
- Visiting Lecturer in Computer Music at Princeton University (1992), University of California at San Diego (1994), and Stanford University (1991, etc.); MacGeorge Fellow in Computer Music, Melbourne University (1995).
- Software Engineer at NeXT Computer Inc. (1986-1991, employee #26). Designer and implementer of the groundbreaking NeXT Music Kit.

**SELECTED ACCOMPLISHMENTS**

Seminal research and two patented inventions on physical modeling sound synthesis. Over 30 publications in peer-reviewed journals, books and conference proceedings on topics ranging from expression in computer music to digital signal processing. Software awards for UAD-2, SynthBuilder, and VisualAudio. Invited speaker at major conferences and forums. Lectures on computer music topics at numerous universities and studios. Music compositions presented in over 25 countries, recorded on 12 CDs, and commissioned and performed by major ensembles and international festivals.

## DETAILED EXPERIENCE

### INDUSTRY POSITIONS

- 2007- Senior Scientist/Software Engineer at Universal Audio, Inc. Specification and development of a new generation of hardware platforms for rendering "Powered Plugins" and audio I/O. Designer of audio algorithms, including analog emulation, physical modeling and other techniques. Developer of firmware, protocols, libraries, APIs, driver software, and test suites. Security issue analysis and deployment of encryption and signature technologies for product authorization and field updates.
- 2001-2006 Senior Software Engineer, Audio Rendering Technology Center, Analog Devices, Inc. Sound synthesis/processing software, algorithm development, project lead/management. Chief architect and engineering manager for VisualAudio, a software environment for creating embedded audio products; includes frameworks, audio modules and a Windows-based signal flow design application. Worked closely with the Director of Engineering to manage several teams and create the strategy for achieving the ART Center goals. Supported key AVR, automotive and pro-audio customers. Closely coordinated with Indian team, and groups in Australia, Asia and Europe.
- 1997-2000 Founder and Distinguished Software Engineer, Staccato Systems, Inc. Chief architect and contributor for SynthCore/SoundMAX, a multi-platform sound synthesis/processing server/SDK for music and games, based on physical modeling synthesis. Developer of the SynthBuilder signal flow design application.
- 1994-1997 Senior Scientist, Virtual Music Entertainment, Inc. Sound programming for multi-platform music-based interactive performance game.
- 1992-1996 Consultant, Stanford University Office of Technology Licensing "Sondius" program. Design of physical modeling sound synthesis techniques and software.
- 1992-2006 Consultant, Apple Computer, Aureal Semiconductor (now Creative Labs), 3DO, etc.
- 1986-1991 Software Engineer, NeXT Computer Inc. Design and implementation of the NeXT Music Kit and associated applications.
- 1982 Consultant, Intelligenetics, Inc. Software for genetic analysis.

### ACADEMIC POSITIONS

- 1995 MacGeorge Fellow in Computer Music, University of Melbourne.
- 1994 Visiting Lecturer in Computer Music, University of California at San Diego.
- 1992 Visiting Lecturer in Computer Music, Princeton University.
- 1990-1991 National Endowment for the Arts Composer-In-Residence with Chanticleer.
- 1984-1986 Research Associate, Stanford University. Research in machine-understanding of music.
- 1983-1991 Lecturer in Computer Music, Composition, etc. Stanford University.

### PATENTED INVENTIONS

- System and Method for Generating Fractional Length Delay Lines in a Digital Signal Processing System.*  
S. Van Duyne, D. Jaffe, G. Scandalis, T. Stilson. (Patent No. 5,742,532; granted 4/21/98.)
- Digital Signal Processing System and Method for Generating Musical Legato Using Multitap Delay Line with Crossfader.* D. Jaffe, J. Smith. (Patent No. 5,781,461; granted 7/14/98)

### COMPUTER LANGUAGES, APIs, SYSTEMS

Computer languages include C, C++, Python, TCL, Objective-C, Matlab, PostScript, Common Lisp, Pascal, SAIL. Assembler for DSP5600x, SHARC, Blackfin, 680x0 and 80x86. Fluent with standard sound APIs, such as DirectSound and VST, and general purpose APIs such as COM. Familiar with system calls in UNIX, Windows, Mac OS X, eCos, XBox, Sony PS2, Posix, and others.

## SOFTWARE AWARDS

- 2009 Mix Foundation Technical Excellence and Creativity Award for UAD-2 Quad.  
2005 International Engineering Consortium's "DesignCON Award" for VisualAudio.  
1999 Bourges Festival "Golden Max Software Award" for SynthBuilder.

## PRESENTATIONS AND GUEST LECTURES

Invited speaker at the 2011 Other Minds Festival, 2006 InStat MDR Microprocessor Forum, the USENIX Conference in Nashville, the Aspen Design Conference and others. Keynote Speaker at the conference of the Australian Computer Music Association. Papers presented at the IEEE International Conference on Acoustics, Speech, and Signal Processing in Tokyo, and at International Computer Music Conferences at the IRCAM studio in Paris, as well as in Venice, Aarhus, Vancouver, Montreal, Banff, Scotland, Rochester (NY), and Columbus (Ohio). Lectures given at the DAAD Computer Music Festival in Berlin, the LIPM studio in Buenos Aires, Argentina and at Columbia University, the University of Michigan, Princeton University, Yale University, Stanford University, University of Illinois at Champaigne-Urbana, Mills College, San Jose State University, McAllister College (Minneapolis), San Francisco State University, the Inst. fuer Experimentelle und Elektroakustische Musik (Vienna), and the Universities of California at Berkeley, San Diego and Santa Barbara.

## PUBLICATIONS

- The Computer-Extended Ensemble*. D. Jaffe and A. Schloss. 1994. Computer Music Journal, MIT Press, 18(2):78-86.
- The Computer-Extended Ensemble*. D. Jaffe. LULU, Revista de teorias y tecnicas musicales, 1(2), Buenos Aires, Argentina.
- Comments on Multimedia, Performance and Interactive Instruments*. D. Jaffe. Proceedings of the Music Unlimited seminar, Australia Council for the Arts, Sydney Australia, 1996.
- Efficient Dynamic Resource Management on Multiple DSPs, as Implemented in the NeXT Music Kit*. D. Jaffe. Proceedings of the 1990 International Computer Music Conference, Glasgow, Scotland, ICMA, pgs. 188-190.
- Ensemble Timing in Computer Music*. D. Jaffe. Proceedings of the 1984 International Computer Music Conference, Paris, ICMA, pgs. 185-189.
- Ensemble Timing in Computer Music*. D. Jaffe. 1985. Computer Music Journal, MIT Press, 9(4):38-48. Reprinted as Music Department Technical Report, Stanford University, 1985.
- Extensions of the Karplus-Strong Plucked-String Algorithm*. D. Jaffe and J. Smith. 1983. Computer Music Journal, MIT Press, 7(2):56-69. Reprinted in book form in *The Music Machine*, ed. Curtis Roads, 1989, MIT Press, pgs. 481-494.
- Impossible Animals: Notes on Birds and Musical Style*. D. Jaffe. Perspectives of New Music, 33(1,2):604-613.
- Intelligent Musical Instruments: The Future of Musical Performance or the Demise of the Performer?* A. Schloss and D. Jaffe. Interface Journal for New Music Research, Netherlands, 22(3):183-193.
- A Lossless, Click-free, Pitchbend-able Delay Line Loop Interpolation Scheme*. S. Van Duyne, D. Jaffe, G. Scandalis and T. Stilson. Proceedings of the 1997 International Computer Music Conference, Thessaloniki, Greece, ICMA, pgs. 252-255.
- The Making of Wildlife*. D. Jaffe and A. Schloss. Proceedings of the 1992 International Computer Music Conference, San Jose, CA. ICMA.
- Music and the Computer: Up-Ending the Family Tree*. D. Jaffe. Keynote address to the 1995 Australian Computer Music Association. Proceedings of the 1995 ACMA Conference, Melbourne, Australia. ACMA. pgs. 1-5.
- Music System Architecture on the NeXT Computer*. J. Smith, D. Jaffe and L. Boynton. Proceedings of the 1989 International Conference of the Audio Engineering Society, Toronto, Canada, pgs. 301-312.
- Musical and Extra-Musical Applications of the NeXT Music Kit*. D. Jaffe. Proceedings of the 1991 International Computer Music Conference, Montreal, ICMA, pgs. 521-524.
- The Music Kit on a PC*. D. Jaffe, J. O. Smith, N. Porcaro. 1994. Proceedings of the First Brazillian Symposium of Computation and Music, XIV Congress of the Brazillian Society of Computation, Caxambu, MG. pgs. 63-69.

## **PUBLICATIONS** (continued)

- Orchestrating the Chimera--Musical Hybrids, Technology and the Development of a 'Maximalist' Musical Style.* D. Jaffe. 1995. Leonardo Music Journal, 5:11-18.
- An Overview of the NeXT Music Kit.* D. Jaffe. Proceedings of the 1989 International Computer Music Conference, Columbus, OH, ICMA, pgs. 135-138.
- An Overview of the NeXT Music and Sound Kits.* D. Jaffe and L. Boynton. 1989. Computer Music Journal, MIT Press, 14(2):48-55. Reprinted in book form in *The Well-Tempered Object*, ed. Stephen Pope, 1991, MIT Press.
- Performance Expression in Commuted Waveguide Synthesis of Bowed Strings.* D. Jaffe and J. Smith. 1995. Proceedings of the 1995 International Computer Music Conference, Banff, Canada, ICMA, pgs. 343-346.
- Rapid Searches for Complex Patterns in Biological Molecules.* R. Abarbanel, P. Wieneke, E. Mansfield, D. Jaffe and D. Brutlag. Nucleic Acids Research, Sept. 1983.
- Real Time Sound Processing & Synthesis on Multiple DSPs Using the Music Kit and the Ariel QuintProcessor.* D. Jaffe and J. Smith. Proceedings of the 1993 ICMC, Tokyo, Japan; CMA.
- Source Separation and Note Identification in Polyphonic Music.* C. Chafe and D. Jaffe. Proceedings of the International Conference on Acoustics, Speech and Signal Processing, Tokyo, Japan, 1986(2):1289-1292.
- Spectrum Analysis Tutorial.* 1987. D. Jaffe. Computer Music Journal, MIT Press, 11(2):9-24 and 11(3):17-35.
- SynthBuilder--A Graphical Rapid-Prototyping Tool for the Development of Music Synthesis and Effects Patches on Multiple Platforms.* N. Porcaro, D. Jaffe, P. Scandalis, J. Smith, and T. Stilson. Computer Music Journal, MIT Press, 22(2):35-43.
- SynthBuilder--A Graphical Real-Time Synthesis, Processing and Performance System.* N. Porcaro, P. Scandalis, J. Smith, D. Jaffe, and T. Stilson. Proceedings of the 1995 International Computer Music Conference, Banff, Canada, ICMA, pgs. 61-62.
- SynthBuilder and Frankenstein, Tools for the Creation of Musical Physical Models.* N. Porcaro, W. Putnam, P. Scandalis, D. Jaffe, J. Smith, T. Stilson, S. Van Duyne. Proceedings of the 1996 International Conference on Auditory Display, Palo Alto, Santa Fe Institute and Xerox Parc.
- A Synthesizer Debugger.* D. Jaffe. Proceedings of the 1983 International Computer Music Conference, Rochester, NY, ICMA, pgs. 110-112.
- Techniques for Note Identification in Polyphonic Music.* C. Chafe, D. Jaffe, K. Kashima, B. Mont-Reynaud, J. Smith. Proc. of the 1985 International Computer Music Conference, Vancouver, Canada, ICMA, pgs. 399-406.
- Ten Criteria for Evaluating Synthesis and Processing Techniques.* D. Jaffe. 1995. Computer Music Journal, MIT Press, 19(1):76-87. Also: Proceedings of the First Brazillian Symposium of Computation and Music, Brazillian Society of Computation, Caxambu, MG. 53-61.
- Using SynthBuilder for the Creation of Physical Models.* N. Porcaro, P. Scandalis, D. Jaffe, J. Smith. Proceedings of the 1996 International Computer Music Conference, Hong Kong, ICMA, pgs. 87-88.
- A Virtual Piano Concerto--Coupling of the Mathews/Boie Radio Drum and the Yamaha Disklavier Grand Piano in "The Seven Wonders of the Ancient World."* D. Jaffe and A. Schloss. Proceedings of the 1994 International Computer Music Conference, Arhus, Denmark, ICMA, pgs. 192-195.
- VisualAudio--An Environment for Designing, Tuning, and Testing Embedded Audio Applications.* D. Jaffe, P. Beckmann, B. Peddie, T. Stilson, S. Van Duyne. Proceedings of the 2005 Conference of the Audio Engineering Society, New York City, NY.

## **MUSICAL AWARDS, HONORS AND FELLOWSHIPS**

Irvine Foundation Grant (2010); California Arts Council/NEA Artist Fellowship (2000); Ross McKee Foundation Grant (1998); National Endowment for the Arts Collaborative Fellowship (1992-95); Featured Composer, Bratislava Electronic Computer Art & Music Project, Slovakia (1995); National Endowment for the Arts Composer Fellowships (1983, 1989); USIA Fund for Musicians at International Festivals Grant (1988); First Prize, Hamilton Chorus Commission Competition (1986); Prize in Newcomp Composition Contest (1983); Presser Foundation Scholar (1977).

### **CD and DVD RECORDINGS**

*Wildlife and other works combining instruments and computers by David A. Jaffe*  
Well-Tempered Productions WTP 5199, 2011.

*Cluck Old Hen Variations, and other works for strings by David A. Jaffe*  
Well-Tempered Productions WTP 5198, 2011.

*2004 International Computer Music Conference DVD*  
ICMC, Miami, 2004. Includes Racing Against Time

*The Seven Wonders of the Ancient World, David A. Jaffe*  
Well-Tempered Productions WTP 5181, 1996

*XXIst century mandolin, acoustic and computer music for the mandolin by David A. Jaffe*  
Well-Tempered Productions WTP 5164, 1994

*intercambio/exchange, computer music from Buenos Aires and California*  
CCRMA, LIPM, CRCA, and the Rockefeller Foundation, 1994. Includes: American Miniatures

*The Virtuoso in the Computer Age—V*  
CDCM Vol. 15. CRC 2190 Centaur, 1994. Includes: Terra Non Firma; Wildlife

*New Music for Orchestra*  
VMM 3024, Vienna Modern Masters, 1994. Includes: Whoop for Your Life!

*CDCM Computer Music Series, Volume 8*  
CRC 2091, Centaur, 1991. Includes: Telegram to the President, 1984

*Dinosaur Music—Music by Chafe, Jaffe and Schottstaedt*  
WER 2016-50 Wergo, 1988. Includes: Silicon Valley Breakdown

*The Digital Domain*  
Elektra/Asylum Records 9 60303-2, 1983. Includes: Finale to Silicon Valley Breakdown

### **MUSICAL COMMISSIONS**

Commissions from Jack Van Geem (2012), Other Minds, Irvine Foundation, Canada Council (2010), Cello Octet Amsterdam (2009), Villa Sinfonia (2008), Andrew Schloss/SSHRC/Canada Council for the Arts (2006, 2008), Joanna Hood (2005), the Russian Arts Foundation/Russian National Orchestra (2001), Quarks! (2000), Irene Mitri (1999), the International Computer Music Conference and the University of Michigan (1998), Earplay (1997), the Lafayette String Quartet (1996), the University of Victoria (1993), the American Guild of Organists (1992), Lynn Kirby (1992), Chanticleer (1987 and 1991), the Modern Mandolin Quartet (1989), the Skidmore College Chorus (1989), the Redwood Symphony (1986), William Wallach (1986), the Kronos Quartet (1984), the Mostly Modern Orchestra (1983), Julie Feves (1982), Edward Gans (1981), David Starobin (1980), the Woolley Foundation (1978), and Bennington College (1978).

### **PUBLICATIONS OF MUSICAL COMPOSITIONS**

*Ellis Island Sonata*, Plucked String Editions Inc., PO Box 11125, Arlington, VA, 1987.  
*Silicon Valley Breakdown*, Schott, Weihergaten 5, 6500 Mainz, Germany, 1988.

### **PUBLISHED INTERVIEWS**

*The Birds and the Bytes, An Interview with David A. Jaffe.* By Mark Alburger. 20th Century Music, May 1999 6(5):1-7.

*David Jaffe: Next, Zeta Violin e altro.* By Giovanni Ramello. Strumenti Musicali, N. 155, 1993.

*An Interview with David A. Jaffe.* By Ricardo Dal Farra. Interface Journal of New Music Research, 22(4):335-342.

*An Introduction to the Creation of ElectroAcoustic Music.* By Samuel Pellman. Wadsworth Publishing Company, 1993. Article: Guide for listening: Silicon Valley Breakdown by David A. Jaffe.

*First Assignments* By David Tutt. Cambridge University Press. Discussion of Silicon Valley Breakdown

### **SELECTION OF MUSICAL PERFORMANCES**

Performances in twenty-five countries, including the following concerts: *Musis Sacrum Schouwburg Arnhem*, Netherlands (2010), Roulette, New York City (2005); Winnipeg New Music Festival (2004); Jack Straw Studio (2003), Brandon University, Manitoba, Canada (2002); Villa Montalvo, Saratoga, California (2001); Society for New Music, Syracuse, NY (2000); San Francisco Symphony chamber music series (1998); the Earplay concert series, San Francisco (1998); the San Francisco Contemporary Music Players

concert series (1998, 1985); Festival of the Union of Writers and Artists of Cuba, Havana (1997); the International Computer Music Conference (Miami, Florida, 2004; Ann Arbor, Michigan, 1999; Thessaloniki, Greece, 1997; Banff, Canada, 1996, Arhus, Denmark, 1994; Montreal, Canada, 1991; Glasgow, Scotland, 1990; Vancouver, Canada, 1985; Denton, Texas, 1981); the Discoveries Festival in Aberdeen, Scotland (1997); the Bourges Festival, France (1994); the Cabrillo Music Festival, California (1991, 1986); Festival Por La Musica en Las Americas, Buenos Aires (1991); the Chanticleer concert series, San Francisco (1991, 1986); the Bergen Festival, Norway (1989); the ISCM Warsaw Autumn Festival, Poland (1987); the Brooklyn Philharmonic concert series, New York City (1986); the American Festival in London, England (1984); the Saint Paul Chamber Orchestra concert series, Saint Paul, Minnesota (1984); the Berlin Festival, Germany (1983); the Venice Biennale, Italy (1982).

**RECORDINGS AS PERFORMER** (in addition to those listed above)

*Heartlands*, Tony Trischka. L.P. recording. Rounder, 1975.

*All Old Friends*, Stacy Phillips. L.P. recording. Revonah, 1975.

*Light our Way Along the Highway*, Bottle Hill. L.P. recording. Biograph, 1976.

*Litany of Tides (Henry Brant)*, the San Jose Symphony Orchestra. Sonic Arts Corporation, 1983.

**INSTRUMENTAL SKILLS**

Virtuoso level on mandolin; virtuoso improviser; highly skilled on violin, viola, guitar, 5-string banjo, mandocello and conducting; also have studied percussion, cello, oboe and trombone.

**OTHER INTERESTS**

Family (wife and two children); bird-watching, bird-photography/recording; amateur (“ham”) radio and Morse code (can copy Morse code at 35 words per minute); Choy Li Fut kung fu, skiing.