

Andrew James Farnell: Computer Scientist (DSP) and Sound Designer

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SPECIALISATION	Audio, synthesis analysis, production, programming.	
KEYWORDS	DSP, audio, programming, sound design, applications, physics and sound modelling, production, audio technology research and development, project management, HCI, C, C++, Perl, Python, Unix/Linux, procedural audio, interactive audio, reactive and generative music, embedded systems, mobile technology.	
SKILL SUMMARY	<i>Languages/Tools:</i> Audio systems, DSP, Puredata, Csound, Nyquist, Assembler(68000/x86), C/++, shell, Perl, Python, Uscript/UnrealEd, Blender, Protools, Reaktor/MSP, Supercollider, Logic/Cubase. <i>Protocols:</i> Jack, OSC, MIDI, USB, http, ftp, MPEG4SAOL. <i>Skills base:</i> Product and content on client and server sides, production, sound design, content creation, instruction. Project management, educational materials design, documentation.	
EDUCATION	Bournemouth University , Poole, Dorset UK. <i>Department of Computing and Cognition</i> Researcher/PhD student in “Human computer interfacing for digital sound synthesis” Demonstrator/Junior Lecturer: Unix, XWindows(Motif), ADA, Software engineering management. 1991-1995 University College London , London UK <i>Department of Computer Science</i> BSc hon. 2.1 Computer Science and Electronic Engineering 1988-1990 Final Project: “Digital MIDI controlled polyphonic sampler” Supervisor: Dr Peter Rounce Bournemouth School , Bournemouth, Dorset UK Advanced Level: Physics(A), Chemistry(C), Electronics(B). Ordinary Level: 12 A and B grades in maths and sciences.	
HONOURS AND AWARDS	RAP production award, station launch.	2000
	Davey McKee and Cambridge board Engineering Prize “Gyrosense ship stabiliser”	1987

CURRENT ACADEMIC
AND INDUSTRY
STATUS

Lecturer/professor of digital audio and consultant in procedural audio **2006 - Present**
I am an independent researcher in the area of sound technology, with a specialisation in computer modelling of sound. I teach on a freelance/contract basis in Audio DSP, sound design, acoustics, audio programming, audio engineering and music technology subjects. This includes designing course materials, supervising students, tutorials, assigning and marking coursework and projects, running practical workshops. I teach at levels from diploma to masters and advise PhD students. Developing educational methods and work on new curriculum strategies is also an interest. I lecture at SAE London, SAE Oxford, Middlesex, Qantm College, RWCM, Edinburgh, Mediamatic, University Porto (visiting professor of sound design) and some other colleges and universities. In addition I do work as a procedural audio consultant for games and mobile product developers and other areas of the entertainment business.

Middlesex University/SAE

Course Designer **2009**
Joint designer of MSc in Sound Design (Middlesex University and SAE London), including unit content, workflows and pre-requisites, timetabling and staff assignments.

Bournemouth University, Poole, Dorset UK

Demonstrator/junior lecturer **1992-1995**

Topics taught: Unix, C, Software engineering management
Administrative: Grading, exam preparation and invigillation. Development of course materials and CBT application design.

SOME NOTABLE
EXPERIENCES

Earcom Consultant product developer for recent AAA title **2009**

Earcom, led by Paul Weir, are a company specialising in algorithmic composition and digital audio delivery for games and real world uses. I consulted in the development of an audio engine to deliver a large dynamic asset set with audio level of detail and context blending for layered composition system.
tools: Pure Data

TSA The sound agency - consultant product developer **2009**

The Sound Agency, led by Julian Treasure, are a supplier of sound environment technology and knowledge to retail chains, and managers of large public spaces. Work includes ambient, generative and reactive music systems. Development of platform using embedded Linux for a generative composition engine. Liaison with leading reactive and generative composers.
tools: RTCMix, Supercollider, Chuck, PureData.

RJDJ P/T Consultant director of technical content **2009**

Leading the formation of the content team of Michael Breidenbruecker's a 2008 start-up (15 people); pioneering reactive music as a new product on the Apple iPhone and iPad devices. R&D in a senior software engineering role, product design and development, artist and record company liaison with new and established mainstream artists. Design of platform components, in house tools, delivery components. The product enjoyed top 20 status in the Apple iPhone store throughout the initial explosion of mobile applications circa 2009. Recruiting and training reactive music producers, formation of product front band "Kids on DSP" etc.
tools: Puredata, iPhone development, Python

Applied Scientific Press Ltd. Author, researcher. **2006**

My own company, participating in 3 years of fundamental research into procedural audio. Orig-

inal algorithm development for interactive/game audio. Writing 650 page textbook. Creating company, product marketing, typesetting, managing proofreaders and software testers. Conference presentation, writing papers, advocacy of methodology. *tools*: Puredata, Csound, Chuck, Supercollider, X, LaTeX, Python on Linux platforms. Main product finally sold to The MIT Press following two years of sales.

Cybatek Ltd., London UK. Data storage, CTO/system designer and administrator.
(mod)Perl/Apache/SQL/FTP **2004-2006**

Start-up formed in 2004 with dot-com entrepreneurs Simon Clewer and Alex Harvey to offer large scale file systems management, LVM, RAID, clustering, redundancy, encryption, security, accounts. *tools/skills*: Perl, Debian Linux, rsync, bash, etherreal, ftp, iptables, cron jobs, rack server specification and deployment. Eco friendly MAID development and spindown management.

Superquote Ltd., London UK. LAMP programmer **2002-2004**

Linux system maintenance and software design. Comparative shopping engines, early deeplinking and spidering technology, data mining, web robots. Pioneers of comparative shopping for the complex product of car insurance before it became mainstream. Fuzzy matching and multidimensional scaling/ranking algorithms. *tools*: (mod)Perl/Apache/(Postgress)SQL, shell, sockets.

Sonic Lab Studios, Bristol UK. Technical Producer and writer **1998-2001**

Production company in partnership with producer Grant Buckerfield. Process and plugin design, mixing, library building. Media production for TV, Radio and film/game effects. Field sound collection, treatment, track production, composition, voice sessions, recording musicians, project management. *tools/skills*: Csound, Cubase, Logic, Protools, outboard analogue electronics, Eventide, AHB, Mackie and Yamaha digital consoles. Clients: BBC Radio, television, Channel4, ITV, independent film productions. In house work at BBC Radio 1, Yalding House.

GWR Radio, Bristol UK. Effects Producer **1998**

Effects and feature producer, station package development. *tools/skills*: Fairlight, Protools.

Galaxy 101 Radio, Bristol UK. Commercial Producer **1997**

Commercial and effects producer. Library building, voice sessions, voice script development. *tools/skills*: Large frame broadcast consoles, SADIE, RCS.

Music Connections, Bristol UK. Synthesiser/plugin Designer **1996**

Hybrid analogue/digital hardware development. *tools/skills*: Breadboarding, wirewrap, PCB design, signal plotting and spectrogram work, oscilloscopes and logic analysis, PIC, UART and ADAC semiconductors, analogue oscillator and filter design. **1995**

Armstrong, Reading UK. Contract coder

Medical robotics application for 6D data input device. *tools/skills*: Polhemus 3-space, RS232, safety critical, ADA, Fuzzy Logic. **1994**

Phillips, Eindhoven NL. System Contractor Sun/Solaris **1993**

Handheld technology. *tools/skills*: CBT training, scripting. Setup and admin of small Sun

SPARC network. Employee account setup, tarchiving to tape.

CONFERENCES AND PUBLICATIONS **Designing Sound - The MIT Press** 2009

Negotiated a contract for my first textbook with MIT

Game sound technology and player interaction - IGI Global 2010

Structure and behaviour of sound objects - in Grimshaw, M. (Ed) et al.

Procedural audio: the future for games 2009

Develop Conference 2009 , Brighton.

Artificial weather systems presentation, Synthetic weather from castle thunder to very very frightening 2008

Sounding Out 4: Sunderland University 4-6 September 2008

Synthetic game audio with Puredata 2007

2nd Audio Mostly conference, Fraunhofer Institute and Technische Universitat Ilmenau, Ilmenau, Germany 27th-28th September 2007.

Sound synthesis for games, paper and panel presentation 2006

Sounding Out 3: Sunderland University 7-9 September 2006

Marching onwards - Procedural synthetic footsteps for video games and animation. 2007

Puredata conference 2007, Montreal, Canada.

A human computer interface for sound synthesis using timbre space: generalising multi-dimensional psycho-perceptual models of Wessel and Grey 1995

CIARM95 - Universita di Bologna and Ferrara

PERSONAL STATEMENT/SUMMARY

With a well rounded knowledge of digital audio computing I like to combine research with teaching and interesting commercial projects related to games, mobile applications, animation and film production technology. Day-to-day work is preparing and teaching material for a private, international audio engineering school. I try to stay informed of new developments in DSP, synthesis, analysis and modelling, and contribute original independent research. My practical experience includes building hardware, operating systems (embedded Linux distros), algorithm and application development, integration, test, production and sales of finished products, all the way to deployment and support to the public. This mix of technical, academic, and product directed commercial experience has given me a mature and unified perspective. It led me to find an unexplored research area and focus on the interesting and demanding pursuit of procedural synthetic audio (to sound effects as computer music is to music). Here I am a pioneer, developing new techniques and advocating new practice to industry. I have written a thorough textbook on the subject, and contributed to others. Recently, I sat on AES panel to facilitate academic/industry exploration of new developments in game audio. From time to time I am asked to review research, give public presentations or advise on new directions in computer sound technology.