Matt Ingalls

mattingalls@me.com
[510] 444.3595

Summary

I am a C/C++/JUCE developer with expertise in audio and music applications. I have worked on a wide range of projects from digital signal processing and synthesis to user interface design.

Employment

8Dio <soundpaint.com> [10/17 - 7/23]

Senior engineer leading development and architecture of 8Dio's unique audio sampler application, *Soundpaint*. Written in C++/JUCE, the cross-platform desktop and plugin application featured DSP effects and audio processing in both time and spectral domains. Work covered all parts of the plugin and utility applications: audio processing, file I/O, UI, networking, encryption, copy protection, and spectral file format design.

Anki <anki.com> [5/17 - 9/17]

Audio Software Engineer maintaining and enhancing the C++/C# audio layer used in the company's robotic toy products *Cozmo* and *Overdrive*.

Radio Ryerson Incorporated <thescopeatryerson.ca> [8/15 - 11/16]

Senior Software Engineer leading a small team developing a cloud-based, collaborative audio editing and mixing application. Architect of the entire system: from the back-end server implementation and API design to the client's networking, audio engine, and user interface. Server-side implementation is in Node.js with a MongoDB database. The iOS (Obj-C) client uses Grand Central Dispatch, NSURLSession, AVFoundation, and UIView animations with a unique "trackless" design. A Node.js chat server was also implemented with a macOS client for internal communication between team members.

Mejay <mejay.com> [12/14 - 3/16]

Lead macOS software engineer for this early-stage startup (incubated and hatched by the incite* design firm) centered around audio streaming. Implemented the Mejay Broadcaster: a macOS app (Obj-C) and kernel extension to capture system audio and stream to a server. Audio is encoded to AAC and transmitted over TCP via NSStreams. Other server communication is handled via NSURLSession. Audio monitoring uses programmatically allocated aggregate devices. Analytics of the stream are displayed in an interactive GUI. The application also interfaces Gracenote and RTMP streaming libraries. A streaming server prototype was also implemented in Node.js.

Voxer <voxer.com> [10/11 - 1/14]

Development and maintenance of the Voxer Walkie-Talkie iOS app, featuring live HTTP audio streaming. Major work included a complete rewrite of the app's audio-networking layer, which involved enhancing ASIHTTPRequest to stream live audio via CFStreams/NSStreams; a new CoreAudio/Audio Unit/Audio Graph/Audio Session implementation; a design and implementation of real-time file I/O classes using SILK encoding; design of a scheme utilizing the iPodTime audio unit to time-stretch live incoming audio for de-jittering the network stream (awarded US Patent #9118743); live audio waveform visualization; and voice-activated recording.

Rogue Amoeba <rogueamoeba.com> [4/11 - 7/11]

Created a Cocoa-based sound file playback utility for macOS. Functionality included drag-and-drop files from finder, localized keyboard hotkey editor, file scrubbing, looping, and threaded file position display.

GVOX <gvox.com> [8/05 - 11/09]

Senior Software Engineer. Sole programmer responsible for cross-platform [C++ on Win32 and macOS] development, maintenance, and migration to modern technologies for the *Encore* and *MusicTime Deluxe* music notation programs and the *Master Tracks Pro* MIDI sequencer. Improvements included: macOS Universal Binary migration; Quartz/GDI+ migration; macOS CoreMIDI migration; unicode migration; MusicXML implementation; registration and copy protection; localization; countless other bug fixes, performance optimization, and feature implementations. Other duties included coordinating beta testing team, customer support, and supervising contract programmers.

Livid Instruments <lividinstruments.com> [7/05]

Created Max/MSP externals for querying ethernet card addresses for copy protection and Huffman coding compression.

Arboretum Systems [5/05 & 10/99 - 1/00]

Ported *RayGunPro* and *Ionizer* noise remover plug-ins to AudioUnit plug-ins. Designed and implemented a software synthesizer for the multimedia editing application, *HyperEngine-AV*. Written in C++, the synth featured unlimited polyphony, MIDI control, band-limited VCO, LFO, ADSR, filters with resonance control, user-selected samples, a user interface with real-time display, patch routing, and the ability to save patch files.

Bias <bias-inc.com> [9/04 - 2/05]

Performed various improvements and feature implementations to the multitrack audio recording application, *DECK*. Duties included: 24-bit and 32-bit support; audio file and playback upgrades; various GUI bug fixes due to a previous Carbon port; drag and drop support; and evaluation of AudioUnit implementation.

Cycling74 <cycling74.com> [9/01 - 7/04]

Implemented CoreAudio drivers for the OSX version of Max/MSP. Created *csound~*, a Max/MSP object interface to Csound. Created *Soundflower*, a macOS kernel extension that allows low-latency audio routing from any application to another. *Soundflower* was named a top new technology "certified hit" of the 2004 Winter NAMM show by *MIX Magazine*.

Education

Master of Arts Mills College, Oakland, CA [1996]
Paul Merritt Henry Prize | Alumnae, Hellman, Crothers, and Greer Scholarships | TA: Computer Music
Relevant Course Work: C, Macintosh Programming, Computer Graphics, Computer Music

Bachelor of Music University of Texas at Austin [1994]
Dean's List | Golden Key National Honor Society | Tuition Waiver Scholarship
Relevant Course Work: C, Fortran, Calculus, Linear Algebra, Computer Music