DSP Software Engineer with 6 years of software development experience with real-time software development and testing. Exceptional experience with implementing audio DSP algorithms, feature extraction, SDK Development, JUCE development, data visualization. Excellent in developing and applying audio algorithms, software development in C++ and Python, as well as the use of audio production software.

Alex Mitchell

Audio DSP Software Engineer

**Los Angeles, CA**

**(210) 251-1477**

**alexxmitchell13@gmail.com**

SKILLS

**Software**:

JUCE, Xcode, Visual Studio,

Eclipse, Jira, Pycharm, Logic Pro X, Ableton Live, Reaper, FL Studio, Pro Tools, cmake, SAF, EAR, librosa, numPy, sciPy, Matlab

**Languages**:

C, C++, Python, Csound, JavaScript, Bash, Git

**General**:

MS Office, iWork, Data Visualization, Audio Editing, Signal Processing, Audio Algorithms, Spatial Audio, Unit Testing, Synthesis, Sound Design, Jira, Confluence, and Agile/SCRUM workflow

**Operating Systems**:

Windows, MacOS

EXPERIENCE

Audio Software Engineer

***Embody Co.****, Los Angeles, CA*

* Audio DSP, JUCE Development for Pro Audio Products (Spatial Audio Production Suite, Immerse Virtual Studio)
* Wrote and integrated unit tests to test audio plugin DSP functionality using Catch2 and cmake
* Integrated 3rd party head tracking files and panner code into Immerse Virtual Studio for headset use
* Added audio assets into codebase to render four virtual studio rooms, to include impulse responses of speaker and room EQs
* Added timer to track time usage of IVS audio plugin
* Added functionality for backwards compatibility

Jan 2024 – Present

Audio Software Engineer

***Madison Square Garden – Sphere Ent****, Los Angeles, CA*

* Researched and developed audio algorithms for use in novel speaker systems, applied these algorithms to MSG audio applications in real-time. This enabled post-production operations for Opening Day shows, including U2:UV Achtung Baby Live
* Led the development and deployment of a spatial audio plugin (VST3/AU), for monitoring of multi-channel audio content in various meter types.
* Implemented a spatial audio framework with MSG speaker configurations, creating binauralizer and auralizer modules
* Instructed other engineers on how to understand JUCE and C++ SDK code, audio programming, DSP concepts.
* Amended existing surround monitoring codebase (EAR) to create 6 spatial audio monitoring plugins with MSG internal speaker configurations
* Backend programming in JUCE C++ apps, to receive control data from other apps on the network
* Created a multi-channel spectrogram viewer for audio engineers to analyze data on set, in preparation for Open.
* Wrote test code for signal processing SDK modules
* Worked with various teams (Capture, Editorial IO, Post Production) to receive feedback and iterate on further versions.

April 2021 – July 2023

April 2022 – Present

Founder/CEO

***Nautilus Audio****, Los Angeles, CA*

* Design virtual software instruments and audio units for audio production tools, Implemented graphics and UI/UX programming
* Developed algorithms for non-linear processing (distortion, saturation)
* Wrote and integrated unit tests to test plugin and DSP functionality using Catch2 and cmake
* Created installer packages for to integrate VST/AU plugins into Mac and PC systems
* Released [Crook](https://nautilusaudio.itch.io/crook-distortion-plugin), a saturation plugin in VST3/AU on an online platform

Page 1

Alex Mitchell

Audio DSP Software Engineer

July 2020 – April 2021

Audio Software Engineer

***Modulate Inc.****, Boston, MA*

* Utilized signal processing algorithms in C++ and Python to preserve and enhance the audio fidelity of application audio, such as Fourier Transforms, resampling (rate conversion), feature extraction, filtering, circular buffering
* Wrote and maintained audio plugins for use as internal tools. Implemented spectral noise reduction as a processor in VoiceSkins and ToxMod apps.
* Prepared large audio datasets for neural network input, which involved feature extraction and training.
* Researched and implemented best methods of noise reduction and removal. Wrote python scripts to prototype C++ applications in JUCE using libraries such as numPy, sciPy, and librosa.
* Used audio production tools such as FL Studio, Reaper and RX7 for automated processing of datasets, prototyping of FX chains, and audio plugin testing.
* Implemented internal Modulate libraries and tools into JUCE processor for communication between modules, network upload.

**Los Angeles, CA**

**(210) 251-1477**

**alexxmitchell13@gmail.com**

SKILLS

**Software**:

JUCE, Xcode, Visual Studio,

Eclipse, Jira, Pycharm, Logic Pro X, Ableton Live, Reaper, FL Studio, Pro Tools, cmake, SAF, EAR, librosa, numPy, sciPy, Matlab

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**Operating Systems**:

Windows, MacOS

April 2019 – Dec 2019

Automation Engineer

***Universal Audio****, Scotts Valley, CA*

* Wrote and tracked bugs and issues, referenced and updated documentation.
* Created, executed and maintained automated test scripts for Apollo x4 and Apollo Twin X devices.
* Optimized UAD2 test codebase by as much as 34%.
* Architected framework for plugin regression tests and integrated in into CI/CD build
* Accumulated experience with plugin regression testing, front end testing and integration testing on MacOS and Windows systems.
* Used Python and Pytest automation framework to write, debug and troubleshoot test scripts.
* Utilized foundation of real-time audio principles, sample rates, buffering, drivers, digital and analog i/o types, to test integration of various software and hardware configs.

EDUCATION

August 2018

Electronic Production & Design, B.M.

***Berklee College of Music****, Boston MA*

**Courses**:

Audio Programming in C, Audio Technology I & II, cSound: Sound Design & Composition, Audio Programming for the iPad, and DSP for Post-Production.

September 2024

Digital Signal Processing Extended Studies Program

***UC San Diego****, San Diego, CA*

**Courses**:

Signals and Systems, Digital Signal Processing, DSP in Wireless Communications, Applied DSP

Page 2