DSP R&D EXPERIENCE

AUDIO SOFTWARE DEVELOPER, *MICROSOFT HOLOLENS, REDMOND, WA, 2015.*

Architected audio event analysis applications for mixed-reality gaming experiences.

Implemented a proprietary DSP / Machine Learning library, extending the functionality of previously extant libraries.

Developed a cutting-edge artificial intelligence application for use in the core of the flagship operating system on Hololens.

Consulted with affiliates, assisting the design and implementation of audio analysis and synthesis features for mixed-reality experiences.

Authored internal tools and plugins (VST, RTAS, etc) for audio signal processing.

STAFF RESEARCHER, *AUDIO DIGITAL SIGNAL PROCESSING, QUALCOMM INSTITUTE, SAN DIEGO, CA, 2013-PRESENT.*

Creating novel real-time audio DSP applications for multichannel and binaural acoustic modeling, using a combination of ray-tracing, IIR and FIR methods.

Improving frameworks by designing automated assessment techniques.

Directing research in a fast-paced, collaborative setting by drafting white papers & publications on developments.

GRADUATE RESEARCHER, *UCSD., SAN DIEGO, CA, 2010-PRESENT.*

Developing a network of high-bandwidth optical sensors for the contact-free measurement of surface vibrations.

Designing a unique, real-time DSP algorithm which implements fast, robust machine learning to perform characterization, source separation / beamforming, and prediction of sound data.

Implementing exotic audio DSP applications for the Cortex M4 microprocessor, including nonlinear filter networks and spectral processing.

Developing audio plugins and apps (VST, etc), which implement totally unique features such as wavelet-based narrow-band dynamics processing / denoising / delay, and the physical modeling of ecological systems.

Contributing to the development of an open-source toolchain for code deployment on the STM32F4, a Cortex M4 implementation.

RESEARCH INTERESTS

Real-time DSP, Acoustics, Machine Learning, Time-Series Modeling and Prediction, Embedded Computing, Sensor Design, Transducer Arrays, Digital Filter Design, Psychoacoustics, Source Separation and BeamForming,Dimension Reduction, Mixed-Reality Game Design.

INDUSTRY EXPERIENCE

CHIEF TECHNICAL OFFICER, *ALGO TRADING INC, SAN DIEGO, CA, 2014*

Designing ground-breaking time-series prediction algorithms for statistical arbitrage. Leading a team of developers for implementation.

AUDIO ENGINEER, *GREENPOINT SOUND LLC, BROOKLYN, NY, 2009-2010.*

Specialized in Repairs, Custom Work, Installation, Mixing, Tracking

PRO AUDIO TECHNICIAN, *FREELANCE, NEW YORK, NY, 2008-2010.*

Consulted on and implemented audio electronics projects for clients.

NEW MEDIA CONSULTANT, *HARVESTWORKS, NEW YORK, NY, 2009-2010.*

Oversaw completion of multimedia projects.

LIVE SOUND ENGINEER, *STUDIO B, NEW YORK, NY, 2009-2010.*

Provided clear and reliable Front-of-House and Monitor mixes for an active venue.

NEW MEDIA CONSULTANT, *NYU, NEW YORK, NY, 2007-2009.*

Guided artists on the completion of multimedia projects.

SKILLS

SOFTWARE DEVELOPMENT: C/C++ , Octave / Matlab, R, Python, Java, Assembly, C#

SCM: Git, Subversion, TFS, Perforce

TARGETS: OSX, Linux, ARM RTOS/Bare Metal, and Windows environments

EE: Analog, Mixed Signal, Microprocessors (ARM, AVR, PIC, BASIC), EagleCAD

AUDIO: DAW (Protools, Logic, Cubase, Ardour, DP, Bitwig, Ableton, Audacity), Sound Reinforcement, Music Production, Synthesis (Supercollider, PureData)

GRANTS & AWARDS

DISSERTATION FELLOWSHIP, 2015
UCSD MUSIC DEPARTMENT TA OF THE YEAR AWARD, 2014.
UNIVERSITY OF CALIFORNIA INSTITUTE FOR RESEARCH IN THE ARTS IMPLEMENTATION GRANT, 2012.
UCSD MUSIC DEPARTMENT TA OF THE YEAR AWARD, 2011.
ELECTROFRINGE INTERNATIONAL ARTIST GRANT, 2011.

EQDUCATION

PhD Candidate in Computer Music, 2015, UCSD (Advancement to Candidacy: 01/2014)
MA in Interactive Telecommunications, 2009 NYU
BA in Music Composition, 2007 Wesleyan University