Champ Darabundit

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EDUCATION

Master's | Stanford University | Expected Graduation: 2022
M.A. Music, Science, and Technology

Bachelor's | University of Southern California | 2015 - 2020
B.S. Electrical Engineering - Signals Emphasis | B.A. Art and Design - 3D Design Emphasis

Relevant Master's Coursework
Intro to Audio Signal Processing I & II, Perceptual Audio Coding, Signal Processing for Digital Audio Effects, Signal Processing for Machine Learning

WORK EXPERIENCE

SPG Acoustics Intern | Apple Inc. | June - September 2021

DSP Engineering Consultant | Eventide, Inc. | September 2019 - October 2020
- Developed virtual analog model of A/D and D/A of vintage analog rack unit to integrate into existing products
- Used least-square optimization to design recursive digital filters based on circuit measurements
- Corrected behavior of filters near Nyquist frequency to ensure similar behavior at multiple sampling rates
- Produced DSP library code using C++ templates to streamline DSP developer API

Luxury Audio Engineering Intern | Harman International | May - August 2019
- Designed software using Arduino to control turntables in anechoic testing chambers over Ethernet
- Built and manufactured in-house custom PCB for turntable control module
- Handled evaluation and QC of speaker system components using Klippel and Audio Precision analyzers
- Calibrated anechoic chambers to maintain testing validity between chambers

Audio Engineering DSP Intern | Eventide, Inc. | May 2018 - May 2019
- Architected an audio effect program to model a vintage effect pedal, now in products
- Modeled and performed signal analysis of a vintage pedal circuit in MatLab and implemented results in C++
- Created variable triangle wave generator development tool in C++ for the development team
- Improved CPU efficiency of existing audio effect programs by 11-16% through filter parallelization
- Ported legacy Assembly DSP tone deaf decoder software to C++ for use in updated products

PROJECTS

Waveguide Pipe Organ Modeling | March - June 2021
- Created an audio plugin using JUCE and Faust based on physical model of pipe organ
- Modeled each pipe individually to account thermal, viscous, and radiation losses
- Project abstract accepted for presentation at Acoustical Society of America meeting in Dec. 2021

Adaptive Equalizer | May 2019
- Produced an adaptive speaker equalization system on a TI DSP evaluation board in C
- System evaluated relative gain error between listener and system input to correct loudness in mel bands
- Optimized basic functions such as FFTs to allow for real-time algorithm to run on embedded system

PUBLICATIONS

Darabundit, C.C., & Abel, J.S. (2021). Conformal Maps for the Discretization of Analog Filters Near the Nyquist Frequency. Proc. of the 24th Int. Conf. on Digital Audio Effects (DAFx20in21), Vienna, Austria.
Darabundit, C.C., & Wedelich, R. (2020). Generalized Digital Second Order Systems Beyond Nyquist Frequency. Proc. of 149th AES Convention, New York, NY, USA.
Darabundit, C.C., Wedelich, R., & Bischoff, P. (2019). Digital Grey Box Model of the Uni-Vibe Effects Pedal. Proc. of the 22nd Int. Conf. on Digital Audio Effects (DAFx19), Birmingham, UK.