Jingjie Zhang

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EDUCATION

Stanford University, Stanford, CA — Sep 2017 - Apr 2020
- Master of Arts in Music, Science, and Technology

Fudan University, Shanghai, China — Sep 2013 - Jun 2017
- Bachelor of Engineering in Electronic Engineering

EXPERIENCE

Electro-Harmonix/New Sensor Corporation — New York, NY
DSP Engineer — Jun 2020 - Present
- Develop and maintain real-time audio DSP algorithms and related firmware on embedded platforms.
- Design and troubleshoot audio hardware systems and evaluate the cost/reliability of electronic components.
- Collaborate with graphic designers and mechanical engineers on the UI/UX design of audio products.

Center for Computer Research in Music and Acoustics (CCRMA) — Stanford, CA
Teaching Assistant — Jan 2019 - Mar 2019
- Maintained the example audio codec algorithm for MUSIC 422/EE 367C: Perceptual Audio Coding.

Positive Grid LLC. — Las Vegas, NV
Audio DSP Intern — Jun 2018 - Nov 2018
- Implemented a guitar-driven synthesizer with high-performance pitch and envelope detection algorithms.
- Modeled the Fuzz Face guitar pedal using nodal analysis and iterative equation solving techniques.

RESEARCH

Unity 3D Audio-Visual Game Development: SeqBattle, Audio Factory — Oct 2018 - Mar 2019
- SeqBattle - Defend Your Music: A hexagonal step sequencer and a chess-like strategy game based on Chunity.
- Audio Factory: A vivid interpretation of real-time audio processing systems based on Chunity.

Audio Time Scale Modification (TSM) and Real-Time Pitch Shifting — Mar 2018 - Jun 2019
- Implemented a real-time pitch shifter using the STFT-based phase vocoder TSM algorithm.
- Designed and implemented a real-time pitch shifter using auditory filter banks with frequency shifting.

Real-Time Simulation of Tube Guitar Amplifiers using Wave Digital Filter — May 2016 - Mar 2020
- Applied the modified block-wise method to the wave digital modeling of multi-stage tube guitar amplifiers.
- Implemented a new C++ WDF library under the adjustable discretization of the Möbius transformation.
- Reduced the overall computational complexity of the iteration process to achieve real-time simulation.

Wireless-Controlled Multi-Effect Guitar Signal Processing System — May 2014 - Jun 2016
- Designed and implemented several embedded systems based on different MCUs including ARM Cortex-M3.
- Implemented several real-time audio effects including noise gate, tremolo, chorus, vibrato and FDN reverb.
- Designed and implemented a communication protocol for a three-terminal wireless communication.

SELECTED PUBLICATIONS

[1] **J. Zhang** and J. O. Smith III, "Real-Time Wave Digital Simulation of Cascaded Vacuum Tube Amplifiers using Modified Block-Wise Method," in *Proc. 21st Int. Conf. Digital Audio Effects (DAFx-18)*, Aveiro, Portugal, Sep 4–8, 2018.

[2] **J. Zhang**, "A Portable and Dismountable Wireless MIDI Switching Device," Chinese Patent No. 201621074252, issued May 31, 2017.

SKILLS

Programming:	C, C++, MATLAB, Python, C#, FAUST, ChucK, HTML, CSS
Music Production:	Reaper, Cakewalk/SONAR, Studio One, Guitar Pro, Kontakt
Electronic Design:	Protel/Altium Designer, OrCAD, LTspice, Multisim, Quartus
3D Design:	SolidWorks, AutoCAD, Unity, ProE/Creo, Blender