



Job Title: Senior Research Engineer, Virtual Acoustic Musical Instrument Synthesis

Job Description and Key Responsibilities

You will research, develop, and implement new sound-synthesis algorithms for a variety of acoustic musical instruments, based on novel strategies that merge physical modeling and sample-based technologies. The context of this work is to accurately re-create the performances of specific musicians, achieving the utmost sonic quality and fidelity to the musician's intent. Initial development efforts focus on string and reed instruments, plucked strings most immediately, and proceed in close collaboration with experts in articulatory gesture modeling for music performance, as well as experts in music production. The ideal candidate has an intimate knowledge of what aspects of an instrument's acoustic model are most important to convey musical meaning and expressivity in the synthesis result.

Thrive in a fun, fast-paced, and informal working environment? To this end you should be highly self-directed, yet capable of forming close collaborative working relationships. Excellent oral and written communication skills are a must.

Required Qualifications

- Strong record of research innovation in physical modeling synthesis with digital waveguides for acoustic musical instruments, with a particular focus on string and reed instruments.
- Proven focus on the sonic and musically expressive qualities of the synthesis result.
- Excellent mathematical and audio DSP abilities.
- Excellent C++ coding skills for cross-platform development.
- Extensive familiarity with music recording and production software (*e.g.*, Logic, Ableton Live, Digital Performer, ProTools), especially in terms of integrating custom audio/MIDI/OSC processing capabilities (*e.g.*, CoreAudio plug-ins; Max/MSP patches) and interfacing with new gestural controllers.
- Demonstrated outstanding ability to perform innovative and significant research in the form of technical papers, theses, or patents.
- Ability to collaborate with expert consultants for specific musical instruments when needed and manage the integration of their work into the core technology.

Desired Qualifications

- A working familiarity with gesture acquisition systems involving capacitive sensors, accelerometers or gyroscopes, and low-cost motion capture.
- Research experience in music cognition and performance behavior, specifically enactive and ecological approaches.
- Familiarity with source-filter (model-residual) decompositions and applications in analysis-based sound transformation.
- Experience with database programming for managing audio resources.

Education Requirements

Ph.D. in Electrical Engineering, Computer Science, or a related field, with a research focus on computer music and musical acoustics.

This is a full-time position. Zenph has offices in Research Triangle Park, North Carolina and the Denver, Colorado area. Excellent pay, stock options, and competitive benefits.

Interested? Contact us at ZenphJobs@zenph.com or 919-899-9284.