

Alignment – Improvised Gestural Performance

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ABSTRACT

This paper outlines the aims and technology behind an improvised performance combining electronic drums and piano with gestural control.

The performance involves a gesturally-controlled audiovisual system drawing on ancillary, expressive or non-sound producing gestures of the pianist to apply digital signal processing to live audio inputs and pre-recorded samples. The work explores the notion of body as instrument, unconstrained by the physical properties of a tangible interface or screen-based controller.

Interactive projections will provide feedback for the performer and audience to reinforce the coupling between movement and sound.

Author Keywords

Gestural control; interactive performance; improvisation.

ACM Classification Keywords

J.5. Performing Arts (e.g., dance, music): Arts and Humanities.

INTRODUCTION

This performance is an improvisation between pianist, Mary Mainsbridge, and Robbie Mudrazija on electronic drums. Motions tracked by the Microsoft Kinect are used to alter tempo on precomposed MIDI sequences, control effects sends and looping of particular phrases. The system is part of an ongoing design process that forms the practice-based component of Mainsbridge's PhD thesis, *Body As Instrument: An Exploration of Gestural Interface Design*.

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MOTIVATION

The gestural system stems from earlier work with computer vision frameworks such as ReacTIVision during the development of a tactile mixing surface and vocal controller for live performance.

A desire to enhance live instrumental and vocal performance with digital signal processing and precomposed elements inspired the development of a system that draws on non-sound producing gestures to enhance expression. The intention is to reinforce communication with the audience by amplifying gestures through projected visual feedback and establish clear links between performance movements and sounds produced. By making the performance more transparent, and the technology behind it more invisible, this performance aims to evoke a sense of inclusion for audience members.

GESTURAL SYSTEM OVERVIEW

Motion tracking is performed by the infrared sensor of the Kinect camera. Joint positions and acceleration data are mapped to multiple sound parameters in a range of Ableton Live session functions including tempo, effects sends and plug-ins such as physical modeling instruments, grain delay and looping through Max/MSP via Open Sound Control (OSC) protocol.

AUDIO SYSTEM SUMMARY

Live audio from the piano is captured with a stereo pair of condenser microphones positioned over the soundboard. The audio output of the Roland V-drums is routed through a sub-mixer.

All live audio inputs are controlled by the ancillary and free-air gestures of the pianist. Loops are layered according to tempo fluctuations influenced by the pianist's rhythmic movements.

VISUAL FEEDBACK

To compensate for the lack of haptic feedback present in the motion tracking system, with the exception of tangible interaction between the performers and their instruments, visual feedback will provide additional information by revealing the state of the system to performers. Quartz Composer merges audio signal information with movement position data to promote a clearer relationship between gesture and sound to the audience.