Strike on Stage: a percussion and media performance

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Figure 1: Strike on Stage in performance.

ABSTRACT

This paper describes Strike on Stage, an interface and corresponding audio-visual performance work developed and performed in 2010 by percussionists and media artists Chi-Hsia Lai and Charles Martin. The concept of Strike on Stage is to integrate computer visuals and sound into an improvised percussion performance. A large projection surface is positioned directly behind the performers, while a computer vision system tracks their movements. The setup allows computer visualisation and sonification to be directly responsive and unified with the performers’ gestures.

Keywords  
percussion, media performance, computer vision

1. INTEGRATING MEDIA PERFORMANCE

Strike on Stage is an interface and corresponding audio-visual performance developed and performed in 2010 by percussionists and media artists Chi-Hsia Lai and Charles Martin. The aim of the work was to integrate computer visuals and sound into an improvised percussion performance. This integration takes place in two ways. First, the performers’ gestures are linked to computer audio and visuals through a computer vision system and microphone. Secondly, the presentation of the performance is unified. The projection screen and loudspeakers are placed immediately behind the performers and the computer visuals and audio is designed in such a way that, to the audience, they appear to be a natural augmentation of the performers’ forms, instruments and gestures.

The work is a successor to Lai’s performance work Hands on Stage [2], developed at the Australian National University. In Hands on Stage, Lai used a computer vision surface similar to that commonly used for reacTIVision [1]. In the case of Hands on Stage, the focus was not on making a touchable GUI, since there was no projector under the acrylic surface, but rather an extended musical and media instrument. Sounds were produced by the shadow of the player’s hands on the surface, detected by a camera, and contact microphones amplified the sound of the player scratching and tapping the surface. Hands on Stage also had a visual component influenced by the image of the player’s hands which was projected onto an external screen.

Strike on Stage was conceived to further the artistic direction of Hands on Stage while addressing some of the limitations of the interface. Whereas Hands on Stage was designed for a solo performer using only their hands, Strike on Stage was designed for two performers, using their whole arms, bodies and drum sticks or other percussion implements to control the performance. The video projection was to be integrated into the performance surface so that the audience’s focus is not divided between the performers and an external screen.

2. THE INTERFACE

The setup for Strike on Stage is centred around a floor-standing projection screen made from thin fabric (denoted ‘surface’ in figure 2). An array of 8 infra-red LED security lights (denoted ‘ir’) is placed behind the surface and the lights aimed to provide an even illumination of the screen.

The performers and instruments are positioned directly in front of the screen. Infra-red light passes through the screen from behind enabling an infrared sensitive camera...
The work focuses on exploring how the interactive environment can augment the percussive gesture of ‘striking’ an instrument.

Percussion performance is often characterised by the visual drama of striking instruments as much as their sound. As a result, part of a percussionist’s individual style is their visual drama of striking instruments as much as their sound. Artistically the work emphasised the ‘strike’ movement of playing percussion instruments and made connections between the performer’s movements on stage and their lived experience as creators of the work.

4. CONCLUSIONS AND FURTHER WORK

Strike on Stage was performed in 2010 as Strike on Stage 1.0, and performances were held at Belconnen Arts Centre, Canberra, NIME2010, Sydney and the Australasian Computer Music Conference 2010, Canberra. The work was also converted into a ‘micro’ version with a much smaller screen and only one IR light. These performances are documented on the project’s blog[1].

These performances proved that the setup for Strike on Stage was viable in a range of performance conditions even when setup time was extremely limited. Furthermore, feedback from the audience confirmed that the performance method was interesting and effective.

The strategy for capturing ‘percussive gestures’ from blob-tracking algorithms was reasonably effective, but there is much scope to explore other connections between the performers’ movements and computer sound and visuals.

Although there are plans to revise Strike on Stage with a new version in 2011 the same techniques could inspire other artistic projects. We imagine a collaboration with a composer or an ensemble with multiple ‘micro’ screens and small projectors.

5. ACKNOWLEDGMENTS

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6. REFERENCES

[1] M. Kaltenbrunner and R. Bencina. reactivision: a computer-vision framework for table-based tangible interaction. In TEI ’07: Proceedings of the 1st international conference on Tangible and embedded interaction, pages 69–74, New York, USA, 2007. ACM.

[2] C.-H. Lai. Hands on stage: A sound and image performance interface. In Proceedings of the 9th Conference on New Interfaces for Musical Expression, June 2009.

[3] The openframeworks homepage - “an open source C++ toolkit for creative coding”. Available from http://www.openframeworks.cc/ [cited January 2011].

[4] The supercollider homepage - a real time audio synthesis programming language. Available from http://www.audiosynth.com/ [cited January 2011].

1http://strikeonstage.posterous.com