Drum On
: Interactive Personal Instrument Learning System

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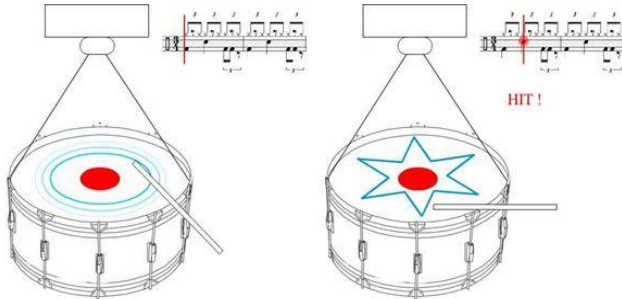[**]Department of Crafts & Design, School of Arts, Seoul National University

Figure 1.*left:before hitting, right:hitting moment*

Figure 2.*install and performing situation*

1. Introduction

Drum On is a prototype system to enhance personal instrument practice that may conventionally create boredom and limitation. The MIDI signal generating from the electrical drum is handled by a computer and each animating image interacts with this signal. The images displayed on the drum by a projector are animated to directly give rhythm cues for the drum player. The animations subsequently react with proper hit timing.

2. Setup

To detect exact hit signal, we use an electrical drum. A short throw projector is positioned at a proper height to cover all of the drum kits projecting with the object mapping method on the drum. The animating effect of playing on the drum kit informs the hit timing to the users and the MIDI signal generated by playing is transmitted to the computer. Sequentially, the computer can detect correct hit timing from this signal and the player is given feedback through the interacting animation. To play smooth animation for eight drum kits, all the image effects are generated by the GPU process.

3. Interaction

The system has three modes of play and practice. Beginner mode: practice basic drum bit sequences categorized by three steps (easy, medium, hard). Practice mode: practice with background music. Free mode: play the drum freely with interactive images on the drum. With the first two modes for educational purposes, the user would become familiar with basic drum beat hitting for the drum kits when the moving animation is close to the red circular area at the center point. After finishing one play loop, the player can check his performance score. One problem is that the kick drum is located at the bottom where it cannot be projected by the projector. As a result, the animation for the kick drum projects on the player's knee, which plays the kick drum. The user still gets visual feedback directly from the animating images. Practice mode with background music is implemented by BMS (Be Music Source) to generate correct hitting timing with background music. It also makes the users feel as if they are performing one piece of music. In free mode, the player is able to play drums with various interactive visual effects on the drum for entertainment value.

4. Conclusion

Drum On provides not only effective practice but also affordable playing enjoyment. Generally, most rhythmical instrument practices are based on paper note or independent display. This leads to diffused sight and interruption in the direct connection between instrument and note, which consequently results in incorrect playing posture as well as boredom. This system provides exact drum bit directly while the drummer's eyes are fixed on the drum kit. The player can practice efficiently while maintaining the right posture while playing. In addition, the gaming factor and interactive animation relieves the tediousness of personal drum practice.

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