

Performing Art Utilizing Interactive Technology -Media Performance <Silent Mobius>-

HoYoung Jung¹, HyungGi Kim¹

¹ Graduate School of Advanced Imaging Science, Multimedia & Film, Chung-Ang
University, Korea
zungdada@naver.com, unzi@cau.ac.kr

Abstract. In the digital times, as interactive technology is extensively utilized for performing art, its area has been expanded to allow diversified artistic expressions. Diversified, professional software and hardware like various sensors and compact equipment sense movement of performers in real time and create sensed data as a media of individually different expression means. In this study, through preceding studies of the works utilizing diversified interactive technologies, a trend of media performance was explored and in line with this trend, an effect of diversified artistic expressions provided by convergence of performing art and technology and its utilization method are intended to be analyzed by reviewing an interactive technology employed in <Silent Mobius> that is a media performance as a work of this author.

Keywords: Interactive Technology, Performing Art, Media Performance

1 Introduction

This thesis is a study on utilization of digital interactive technology in the field of performing art. As digital technologies have been extensively utilized in the field of performing art, its area has been expanded to allow diversified artistic expressions. Among these, computer technology based interactive technology is represented in diversified ways as a new form of convergence including ceaseless mixture, restructure of media through breakup of art genre and form destruction and digital media based new art environment is created.

A study on how interactive technology defines a new image form while having relevance with performing art and what type of image it creates would be required by clarifying its characteristics and usefulness in detail. In this study, diversity of artistic expression provided by digital technology and future prospect of performing art will be suggested and its utilization possibility will be promoted by discussing diversified utilization results through <Silent Mobius>, a media performance work in which diversified interactive technologies were extensively utilized.

2 Related Studies

2.1 Concept of interactive technology

As technology elements being utilized for producing performing art work, all the existing IT technologies, hardware terminal, computer software, its programming language and media are utilized. The biggest features of interactive technology is an interactivity between performer and technology and image or video being reacted depending on movement or sound of performer, 3D effect or hologram for virtual fantastic expression, sound, image, lighting that are reacted depending on sensors attached to joint or body of performer and network that helps participate in theater setting being interfaced with mobile phones of the audience are properly reflected in performing work. These media are extensively utilized as a new expression means of performing art by it being properly embodied in the artistic works [1],[2],[3].

2.2 Performing art utilizing interactive technology

<16 [R]evolutions> of Troika Ranch Company

As a media performance in which 3 sets of projector, infrared camera, 2 sets of computer and Isadora, EyesWeb software were used through interconnection, its premiere was performed at New York in 2006 [4].

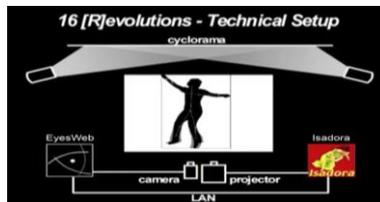


Fig. 1. 16 [R]evolutions

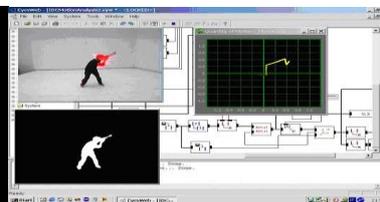


Fig. 2. EyesWeb

This performance was directed through interaction of image, music and lighting by capturing movement of performers in real time using video camera and software. When performer was moving on the stage, its movement was shot by infrared camera and its information is transmitted to EyesWeb. And then EyesWeb converted this image to black silhouette and virtual 12 frame points are established on the image of that performer. While EyesWeb detects and analyzes movement of this performer based on these points, its analyzed information is sent to Isadora. Based on 12 frame points sent to Isadora, movement and position of performer are read and its data is specified. These data values spread on the stage by diversified image effect. By sensing movement size of performer, sound volume and image movement are changed rapidly. As if each body parts such as hand, foot, arm and leg of performer draw a picture, an image is unfolded on the stage depending on movement of the

performer. As interactive technology being achieved in real time is interacted with performer, emotion of performer or theme of the work is further maximized [1],[4].

<Mortal Engine> of Chunky Move



Fig. 3. Mortal Engine

<Mortal Engine> is a performance where dance, video, music, laser show are generally demonstrated by extensively using silhouette of projection reacting to movement and sound. Infrared tracking camera installed at the ceiling of the stage keeps capturing movement and traffic line of performer and it projects each different diversified image effect to the floor by programming it. On top of basic technology of tracking, diversified image contents reacting to silhouette of performer create unique visual effect and solid 3D space. Not dancing accompanied by pre-arranged image, impromptu movement of performer is interacted in real time and a shrewd image effect that was unable to be felt in existing stage is shown to the audience [5].

3 Media Performance <Silent Mobius>

3.1 Technology design of <Silent Mobius>

2 sets of projector are connected to Dualhead2go equipment and image is projected like one screen. For basic image, sound control and output software, Isadora was used and movement of performer was sensed by EyeCon that is motion sensor software. In addition, compact wireless camera and transceiver were used and each computer of Isadora and EyeCon exchanged data mutually through OSC communication.

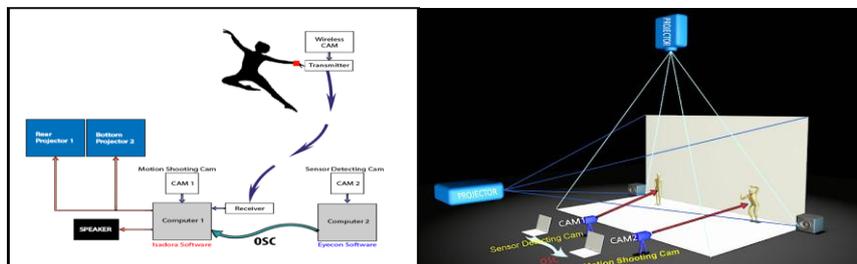


Fig. 4. Technology design of <Silent Mobius>

3.2 Interactive technology

Compact (miniature) wireless camera

Subminiature wireless camera is attached to palm of performer and a transmitter is connected to arm and a notebook connected with projector receives transmitter signal. Real time image is projected on stage floor by reflecting diversified effects after receiving input of Isadora. At this time, by measuring brightness value of transmitted image, such value was inserted into data that controls pre-arranged play speed of line image and image speed projected into backstage was designed to be changed depending on movement of performer (brightness of received image).



Fig. 5. Scene of compact (miniature) wireless camera

Motion sensor

As motion sensing software, EyeCon was used. This software is operated on a principle that if something (performer) touches the line by setting virtual sensor line on screen viewed by camera, command (sound or video play) connected to it is executed. Eyecon sound and image data are transmitted through OSC (Open Sound control) by Isadora computer to which projector is connected. At Isadora, it is outputted as projector sound by using such image data after adding various effects.

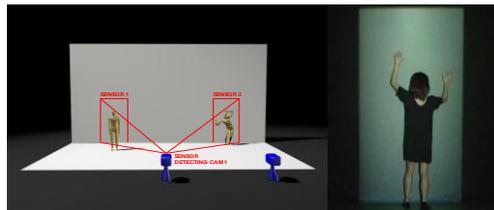


Fig. 6. EyeCon and Scene of Motion Sensor



Fig. 7. Real time motion

In this work, virtual sensor line that is not visible on stage was set. And quadrangle image was projected by matching it with established sensor line. If a performer touches such part, a certain sound was designed to be played. Even though it is a sensor line not visible to audience, whenever a performer tries to stay away from such space, effect sound established on each sensor line is played and impromptu movement of performer is shown to be expanded as sound.

Real time motion shooting and delay

Motion delay technique is used in real time image based on scene that is achieved with relatively simple method of shooting performer on stage with camcorder and outputting its image each 0 second, 1 second, 2 seconds later after inputting it from Isadora. A performer actually moves on stage alone by applying each different color on each delayed image but real time image shows as if 3 performers move together. Reproduced delay image of performer shows diversified images by giving variety to various image effects in real time based on direction of making size smaller or changing colors through Isadora.

4 Conclusion

Various software and equipment used for this work were designed to reflect theme, intention and feature of the work. Through miniature wireless camera being used in daily life, vivid image that was unable to be watched in the past was shown to be harmonized with performer and by using invisible virtual sensor, an effect of impromptu movement of performer being expanded to interactive sound was also demonstrated. In addition, by using real time motion delay technique, even though one performer moves, a scene as if several performers are performing group dancing on stage was directed as well.

Utilization of diversified media by interactive technology implies significant meaning in terms of its range and work utilization. Computer technology is more than enough as a means and material that overcome limitation of expression involved in performing art. If interactive technology should be applied to the works properly through sustained research and extensive experiment by keeping pace with IT development, it could play a positive role as a genre of developing and converging a new performing art [6].

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