Paravie: Dance Entertainment System for Everyone to Express Oneself with Movement

Jun Usui, Hirotaka Hatayama, Takashi Sato, Yumi Furuoka, Naohito Okude
Keio University Okude Laboratory
5322 Endo Fujisawa Kanagawa Japan
{ussy, hatayan, s03481ts, t03883yf, okude}@sfc.keio.ac.jp

ABSTRACT
This paper introduces Paravie, an entertainment system that anyone expresses oneself with movement. Paravie consists of a recording studio where a user mimics a role model movie and a mobile movie viewer which shows some people dancing with same music. User can enjoy learning dance skill with original expression as he draws upon various movies which recorded in various place and time.

Categories and Subject Descriptors
J.5.5 [Arts and Humanities]: Performing arts

General Terms
Performance, Design, Experimentation

Keywords
Dance, interface, interaction, training, proficiency, entertainment, moving image

1. INTRODUCTION
Paravie is an entertainment system which consists of a screen with a camera, and a mobile device, both networked by a computer.

First, user faces to the screen and selects a music. Then the user's mirror reversed image is projected on left half of the screen. Moving image of a model dancer is projected on right half of the screen. By utilizing this system, the user mimics the model movie by looking to it and his/her own performance simultaneously. The user enjoys dancing even if s/he is not specially trained for it, and can also get skillful.

Also, a user can watch movies of others dancing to the same music by using a networked mobile device. Movies are displayed in a row, and the time-lines of the movies are synchronized along to the music. By comparing his/her dance with others, user can realize his/her characteristics and challenge points. Moreover, it is enjoyable to watch movies as their rhythm synchronize. Paravie enables users to discover their own expression and to improve their dancing skills by referring to the movie of others, recorded in various place and time. Therefore, there is a potential for this product to become a new entertainment-media for one to enjoy dancing as though s/he sings in Karaoke.

2. RELATED WORKS
There are many researches aiming to improve athletic ability [1][2][3]. They are useful to improve physical skills, but they do not give much thought to enjoyment of physical activity. Kick Ass Kang-Fu [3] is an exception, since it strengthens training motivation, but it still needs time skill to set up the complicated system.

It is effective to compare and mimic a number of model performances to improve one's athletic ability. In the realm of professional sports training, computer software which can layer multiple performances like Simulcam [4] is used. Also, mimicking is one of the essential elements in game play [5]. In aerobics, people enjoy exercising by repeating the instructor's actions.

PrintClub [6] and atMOS [7] are media to capture pictures and movies. PrintClub is very popular among female students since it is easy to take pictures, and also has the excitement to share the printed pictures with friends.

By taking a simple way to project user's performance and model movie side by side, Paravie enables users to compare and mimic the model movie while facing the screen, leading to combine user's enjoyment and improvement. Also, as a user does not have to attach special equipments directly on his/her body to dance, and compare performances using viewer, they can use Paravie in ease, like as though going to a Karaoke or a PrintClub.

3. PROJECT DESCRIPTION
Paravie is made by a recording studio and a mobile viewer (Figure 1). The recording studio uploads the movie data, attached with the music data, to the server. The recording studio is made by a camera, PC, projector, and a screen (Figure 2). User can point to the music list in the screen, in order to select a tune. Then the user's mirror reversed image will be projected on left half of the screen. Moving image of a model dancer is projected on right half of the screen. The system starts the music and records the user's moving image. When recording ends, the moving image is
uploaded to the server, so it can be seen with the mobile image viewer immediately.

The mobile image viewer has an original interface, which the dance movies of the same music is displayed all in a single horizontal row simultaneously (Figure 3). User can watch dancing movies of others by pushing either the right or the left end of the display. Also, user can change the on-going music and watch different dances by pushing either the top or bottom end of the display.

5. CONCLUSION
This paper introduced Paravie, a dance entertainment system consists of a recording studio, where a user can dance mimicking a model movie, and a mobile movie viewer, which shows movies of other users dancing with the same music. Result of the user study with 10 examinees, both beginner and skilled dancers enjoyed dancing with Paravie. Therefore, a wide range of people will be able to use Paravie as a new entertainment media.

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7. REFERENCES