

Stop-motion cameras in the network: connected multi-cameras for the collaboration work in stop-motion

Yoichi Ochiai* and Keisuke Toyoshima**

*the University of Tokyo *University of Tsukuba



Figure 1



Figure 2

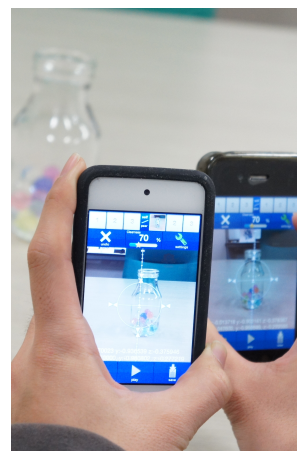


Figure 3

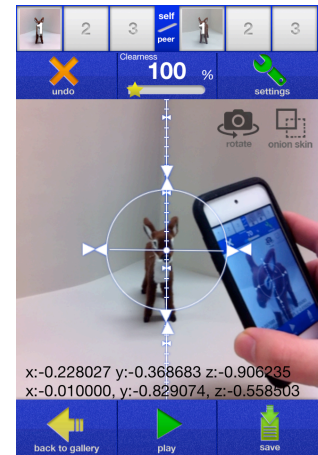


Figure 4

Figure 1, Figure2: 3D gif animation on single image (separated to two images) Figure 3: use scene Figure 4: our system's interfaces

1. Introduction

There are several systems and researches for the stop-motion cameras[1]. We focused on the collaboration work and new expression in the stop-motion movie. We developed four system modules for the stop-motion cameras which are connected each other on the network. It enables users to capture, to share and to adjust images simultaneously between several cameras on the same network (figure 5).

Then using the onionskin and exchanging the images between different cameras supports users to take 3D animation and multi-angle stop-motion movies easily.

2. Implementation

We developed four system modules on the iOS and it works on several hardware based on the iOS.

First, we developed the 3D onionskin system for multi-cameras. If our system captures the image, it sends to the other cameras in the same network. If the user pressed the onionskin button (figure 4 up), the images start blinking and the system shows camera view and the image that taken in the other cameras alternately. This function makes 3D gif animation from these two images (figure 1).

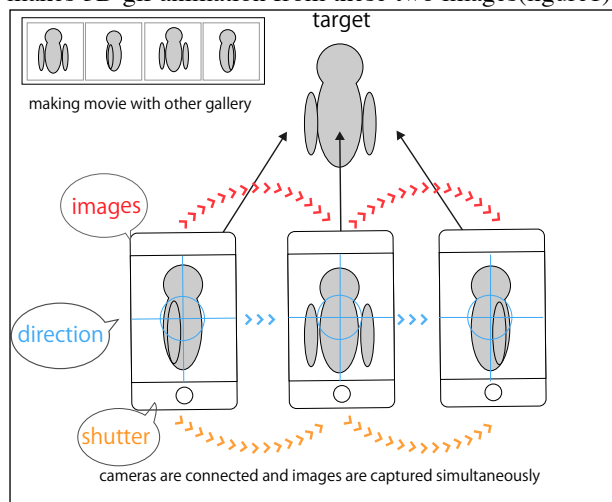


Figure 5: (left) 3D gif animation on single image.

This system supports users to take the 3D photography easily.

Secondly, we developed the multi-shutter system. If our system captures the image, it transmits capturing signal to the other cameras and they capture the image simultaneously. This system enables users to make the 3D gif animation and bullet time images like the Matrix movie[2] easily. In addition, we developed time lapse capturing system in this application. With the time lapse system and multi shutter system, users can take the fixed 3D movie using two cameras.

Third we developed multi spirit level system (figure 4). Each camera has a mark in the center of the camera view that shows the difference of the angle between itself and the other system. This system supports users to set the same angle easily.

Fourth, this system has the animation system with multi-gallery. This system supports to make a stop-motion movie by the images from several galleries of several cameras.

These four systems are merged in one application and user could use system to make the new expression in stop-motion movie.

3. Future Work

Stop-motion movie's metaphor is used in a lot of areas such as life log (time lapse) and 3D viewer (rotation) in the web. Using this system, users can make these contents easily. Adding to that, collaboration in the work would have a chance to give new expression in stop-motion movies. For the next work of this concept, we are going to develop the location detecting system for each camera and automatically correct the camera angle system on the location system. These systems enable users to edit the stop motion movie with the data of angle, position and camera in collaboration.

REFERENCES

- [1] Stephen A. Kallis, Jr., Computer Animation Techniques In: Journal of the SMPTE, 1971
- [2] USPTO, trademark serial number #78285661