

# Easy-To-Use Authoring System for Noh (Japanese Traditional) Dance Animation

Masaki Oshita  
Kyushu Institute of Technology  
oshita@ces.kyutech.ac.jp

Reiko Yamanaka Masami Iwatsuki Yukiko Nakatsuka Takeshi Seki  
Hosei University  
{yamanaka@, iwatsuki@, yukiko.nakatsuka.58@, takeshi.seki.67@adm.}hosei.ac.jp

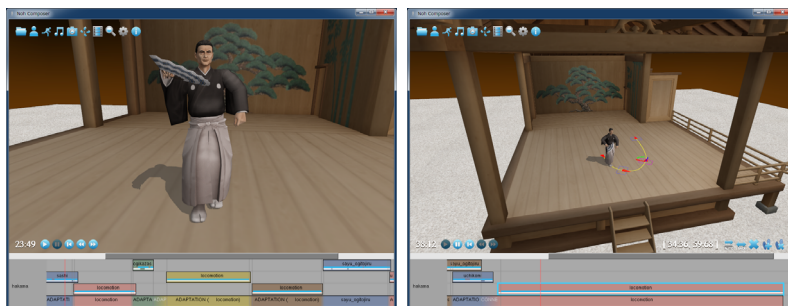


Figure 1: The authoring system for Noh dance animation.



Figure 2: Comparison between the video from motion capture and the synthesized motion.

## 1 Introduction

In this article, we introduce an easy-to-use authoring system for Noh (Japanese traditional) dance animation. This is a joint research between computer animation and Noh research groups.

Noh is a genre of Japanese traditional theater, a kind of musical drama which has been performed for 600 years (Brazell 1998). Similar to other dance forms, Noh dance can also be divided into small, discrete units of motion (*shosa*). The continuous motions performed on stage are written down in *katatsuke*, a traditional notation, and a main actor called Shite dances along with singing or instrumental music by aligning consecutive motion units according to the *katatsuke*. In theory, if we have a set of data of motion units (*shosa*), we can synthesize Noh dance animation by composing them in sequence. However, it is difficult for researchers, learners and teachers of Noh dance to utilize existing animation systems. Moreover, simple connection of these units is not enough to synthesize continuous dance animations identical to real performances by professionals.

We are developing an easy-to-use authoring system for Noh dance animation. We employ our smart motion synthesis technique (Oshita 2008) to compose motion units automatically. The goal of this research is to provide a tool with which people can learn and enjoy Noh dance. It can also be used to visualize old-style performances described in historical documents. This can be very useful to the researchers of Noh. Another goal of this research is to identify how professional performers move their bodies especially during the intervals between motion units, the content of which is not clearly documented but passed from teachers to apprentices tacitly through their training. By analyzing the differences between the synthesized motion and the motion captured from a professional performer, we expect to grasp their way of moving. Our findings would help further development of motion synthesis technique to realize natural connecting motions. We also expect that our results can be extended to other kinds of dance forms and even non-dance human motions too.

## 2 Our System

On our prototype system (Figure 1), the user can select and put

motion units on the timeline. We captured about 50 motion units with the help of a professional Noh performer. Based on input motion units arranged on the timeline, our system automatically synthesizes a continuous motion of the character.

Although recent animation authoring systems (e.g. Motion Builder, Maya) have similar functions, to get a continuous and natural-looking motion, animators still need to adjust the appropriate blending ranges, additional constraints, and motion speeds, etc. These are difficult tasks for novices. The advantage of our system is that it automatically determines appropriate synthesis method for each pair of sequential motions based on the constraints between the feet of the character and the ground during motion. As the user changes the timings of the motion units on the timeline, the system interactively changes the output motion.

We also implemented a module for generating walking motion based on a given path (Figure 1 right), because the performer sometimes walks along a specific path on the stage in Noh dance.

## 3 Evaluation and Future Work

With the help of a professional Noh performer, we capture the dance motion and compared them with synthesized motions from by our system (Figure 2). We have noticed some differences between them. For example, since our system simply blends the upper body poses between two motions, the synthesized animation contains unnecessary motions that are parts of the original motions or are added in the blending process. The professional performer pointed out the difference of subtle moves of the wrists. As future work, we are going to do further analysis and extension of our motion synthesis method. We also demonstrated our prototype system to the professional performer. He is impressed with our system very much and commented that our system would be a good tool to study Noh dance. We are also going to have many people use our system to get more feedbacks.

## References

- OSHITA, M. 2008. Smart Motion Synthesis. *Computer Graphics Forum (Pacific Graphics 2008)*, 27(7), 1909-1918.
- BRAZELL, K. (ED.) 1998. *Traditional Japanese Theater*. Columbia U. Press.