A Study of Virtual-Form Modeling System Using Unexpectation

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1 Introduction

There are several major computer oriented approaches to model three dimensional forms. These approaches include producing the intended form from the original program and from 3DCG software.

The former approach requires fairly high level of programming skill. Therefore, it is not practical for the beginners of computer programming. With commercial 3DCG software, we will be able to create photorealistic images bearing a remarkable resemblance to the real world. However, since these kind of graphic software is overly complicated concerning how to use it, it takes a lot of time to get used to these software. One of the most serious issues of these software will be the enormous amount of parameters to be defined. Also, recently, some immersive 3D form modelers which has visceral interface have been developed as a part of virtual reality technology. This is one another approach to model 3D form.

To use above mentioned type of tools, a user is assumed to have a certain level of knowledge concerning computer graphics and use of computer software. In these environments, the main activity to be taken is not 'creating' but 'manufacturing' graphic data. The generated form can be precisely close to what the user imagined in advance, however, it strongly depends on user's imagination and skills.

For these reason, we propose a 3D modeling system which has interactivity, simple input way using body motions and which respod to input with unexpected forming.

2 Unexpected forms

We present a VR-based 3D forming system which can creates unexpected form for user. In our system, we use a special kind of data glove, which can capture touching fingers. Also, the proposed system has random factor, so that user cannot create intended form. Consequently, user will associate or find a new image(form) from the created form - this is such a hallmark of 'unexpectation'(Figure 1).

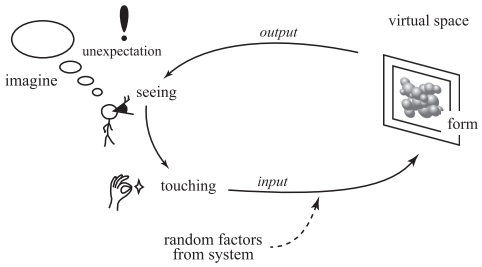

Figure 1: Outline of interaction cycle

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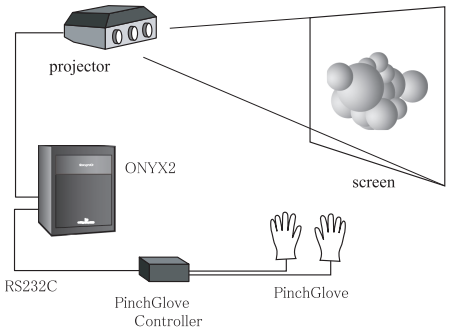

Figure 2: System configuration

In the implemented system(Figure 2), a user is able to create forms by putting spheres into virtual space one by one. But the user cannot put on where just as he wants to, and cannot decide a size by existence of randomize factors - (1)randomized position and (2)randomized radius. Although a user acts in these restricted space, at a certain instant, he will find a form which is different from which user imagined so far. For example, on fine day in the sky, you might be able to find clouds look like ice-cream and whale and so on. The proposed system operates similarly to such a kind of experience. The typical form creation activity relied heavily on user-specific imagination. By introducing the notion of unexpectation, our system provides a form which is different from one which user expected in advance, and conjures images of a new form.

Furthermore, this system canbe characterize not only as a virtual reality system, but also as an interactive art system. A performer enjoys interactivity through creating an expected form.

3 Conclusion

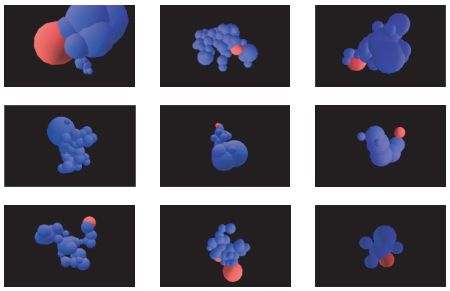

Figure 3: Forms created by users

In subjective evaluation tests on this system, all users could have understood the use of simple interface and could create forms in virtual space with enjoyment(Figure 3). Also, any user could not work out the way that he intended, however, it successfully gave rise to the different form as a result based on user's imagination. Finally, the most users were enjoying unexpectation. Now we can say that this system encourages user's imagination and inspiration in their mind.