A study on the Alternative Artworks and Gallery Based on AR

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Introduction

This study and its works are for displaying alternative artwork through the augmented reality system. Most artists want to get results through the reactions of the spectators in their exhibition. Thus, the exhibition space is of utmost importance to them. But they must pay heavy costs and invest much labor for the installation of their works. So, we suggest that there be an alternative exhibition space for art works. We expect that these alternative forms might face various restrictions when there are complex configurations involving physical installation. However, we hope to represent more visual information than actual installation even though we incur lower expenses and use less labor.

Method and Implementation

The methods for implementation of the exhibition and artwork through AR can be divided into the 3D modeling for augmentation on screen, with suitable adaptation for the diverse features of the artwork, and configuration of the exhibition environment.

3D modeling is divided into plane work, solid work, and media installation. In plane work, we can render the plane image as orthogonal coordinates with patterns on the wall or the table and construct an environment similar to the real display. And we can render the image, play the movie as texture material, etc., responding to the user's eye direction. Both static and dynamic images can be rendered. The solid form can be shown through 3D modeling. We can show various images according to the viewer's angle by applying different materials to each side, using objects and animation. As we can include the text and sounds based on 3D within the image, the diverse effects of a display can be multiplied. We can install the work by configuring the space using a combination of patterns or by expanding various display devices.

These works are implemented through 3D modeling programs such as 3DS Max, MAYA etc. and applying the various algorithms such as OpenGL, DirectX, VRML etc. If it satisfies the phsical conditions, we can present more visual effects and simulate reality in the virtual environment. In particular, we can send represent more information in the work when we use human body animation throughout real-time interaction images as compared to using static images in the traditional method. Thus, we can deliver greater satisfaction to the audience who demand multi-level experiences.

We need an image acquisition camera, a display unit, and hardware such as a PC for implementing this display. As in previous experiments, we can view the installation by using the LCD panel plus the CCD camera. Also, the wall can be the marker while and the solid form uses the box and table. With these, we can configure the spaces in various forms, corresponding to the features of the work itself and responding to the viewer's taste.

The space configuration made by these methods is similar to the use of exhibition spaces in the traditional way. In the configuration suggested in this study, we construct the display environment using pattern images only and we can see the augmented work when we access the system and view the display unit. These configurations embed the units needed for system implementation within the exhibition spaces.

The art is made by representing the target or the existing condition. Also, this representation is elaborated through the use of metaphors and parables. (Figure 1)

Conclusion

Various materials can be used with advanced technology to decorate ordinary spaces as well as art spaces. But, the main target is always the human being and the results

Figure 1: Diverse display forms

must consider the human scale and the environment more actively.

In this study, we try to find the alternatives to overcome the constraints experienced in the use of traditional exhibition spaces. It is difficult for artists trying to represent various values to overcome these restrictions. We suggest that applying AR technology and using display space configuration can be viable alternatives. Unlike the existing display which only has one-sided delivery, the animation and sounds of 3D models can respond to the participant's operation, and the space configurations of various patterns can change the form of the display space. The form that the static image is changed into the visible message by the participant can be a major feature of the work itself. Of course, when using virtual medium, the work will be different when compared to using real material in traditional forms. However, the viewer can gain subjective sensitive information of the work's uniqueness through the

Figure 2: AR implementation as artworks

substituted multimedia delivery of direct and active information. Yet, we do not want to virtual technology to take over the artist's creation. The creators must be active in providing these values. The work can be performed through the viewer's the faithful understanding of the creator's intent at every moment. (Figure 2)

To install a more advanced display, we need to apply real-time materials in multiple forms based on photographs taken from life, and using hardware based on wireless, high resolution display, etc. This can increase real-time experience of the work through transformation of information and the lively use of space. If this study is enlarged, we can satisfy various display conditions for artists with different intentions to express, and suggest effective alternatives for people with diverse creative wills. We can always try to make the system helpful for creators who aspire to represent their own values.

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