Virtual Dress-Fitting Media Art System using Kinect and Augmented Reality

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Abstract: This paper presents a media art system for virtual dress-fitting using Kinect and augmented reality (AR). We use a Kinect sensor to obtain the coordinates of joints of a user’s body. The virtual clothes are resized to fit the user’s body using the bi-cubic interpolation method and are then overlapped on their body using the obtained joint coordinates of each body-part. The audience can interact with this system as the virtual clothes move according to the movement of the user’s body using Kinect skeletal tracking. The purpose of this system is to help user’s find their true beauty through virtual dress-fitting

Keywords: media art, virtual dress-fitting, Kinect, augmented reality

Received Jul. 28, 2016; revised manuscript received Feb.2; accepted for publication Feb. 26, 2017; published online May. 31, 2017. DOI: 10.15323/techart.2017.05.4.2.10 / ISSN: 2288-9248.

1. Introduction

In recent years, many researchers have tried to represent the mixed reality (MR) world by combining the virtual world and the real world using augmented reality (AR) [1]. This can make it possible for people to interact with the virtual and real world. In addition, people are leading a very busy life in today’s world, which has resulted in online shopping becoming a part of daily life. Thus, many department stores and shopping malls are trying to offer virtual dressing room technology using AR on-line. This system can interact with a user so that they can see a real-time display of virtual clothes on their body on the screen; moreover, the clothes move along with the user. This system is more realistic than seeing a picture of clothes on models, and it is also fun to use.

2. Purpose of Production and Theme of Artwork

In modern society, educational background and beauty are considered to be very important. People who experience failure feel a sense of shame and cut themselves off from society. This is a problem that is ever increasing. In addition, they also avoid outdoor activities such as shopping, because they are conscious of the people’s eye. This virtual dress-fitting media art system can help them to realize that they are beautiful. The ultimate purpose of this system is to encourage people who feel a sense of shame to enter society with confidence and also have fun in the process.

3. Fabrication technology

The proposed media artwork is implemented by using Open NI(Natural Interaction). The position of the user and their motion are obtained from the infrared (IR) rays emitted from the Kinect IR Projector. The IR sensor obtains depth information from the infrared rays reflected from the user [2]. The Open NI provides the coordinates and motion information using the depth information obtained from an IR sensor. Fig. 1 shows an illustration of the information of 20 joints obtained using Kinect and Open NI [3]. In order to fit clothes to a user’s body, we first use the coordinates of five joints (right/left shoulder, hip center, right/left ankle).
Next, we calculate the distance between each joint coordinate, resize the selected clothes using the bi-cubic interpolation method, and display the clothes on the user’s body. In this work, the user can select one of several clothes using hand-tracking technology, as shown in Fig. 2.

![Fig. 2. Result of clothes selection using hand-tracking technology.](image)

The clothes move according to the user’s motion. To enable this, we apply a skeletal-tracking method using the above-mentioned coordinates of five joints. Fig. 3 shows images of the user trying on virtual clothes and the movement of the clothes along with the user.

![Fig. 3. Media art performance.: (a) result of cloth fitting on user’s body and (b) result of interaction with media art system: images of the situation when the user is moving.](image)

The proposed method is applied in real-time and the image of the fitted clothes is displayed on a large screen.

4. Conclusion

This paper proposes about a system for fitting virtual dresses using Kinect and AR. The proposed method fits clothes on the human body using the joint coordinates of the body parts obtained using the Kinect sensor. Hand-tracking and skeletal-tracking methods were used for interaction with this system. The results are displayed on a screen with virtual clothes overlapping the user’s body. Therefore, the proposed method helps people who feel a sense of shame not only to have fun, but also to find their true beauty.

Acknowledgement

This research is supported by the Ministry of Culture, Sports and Tourism (MCST) and Korean Creative Content Agency (KOCCA) in the Culture Technology (CT) Research & Development Program 2016 (R2015040011).

References


Biographies

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