Consideration for the Possibility to the Tourism by the AR Technology

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Abstract

The promotion of the tourism nation became the important problem of our country, and we expect increase of the number of the foreign tourists visiting Japan. So we must contribute plain guidance information to the foreigners who cannot understand Japanese. On the other hand, AR (augmented reality) is becoming the boom recently. In this paper, when we use the AR technology for tourism and sightseeing, we inspect what kind of possibilities we have through some experiments.

Keywords: Promotion, Augmented reality, Sightseeing, Traditional culture.

1. Introduction

As of 2016, virtual technology is showing great excitement. Regarding VR technology, dedicated equipment with a slightly high threshold is needed although it has a price range where individuals can reach out. On the other hand, AR technology has come to be seen in a wide range of fields such as advertisement, sightseeing, education and entertainment due to popularization of personal-owned devices such as smartphones and tablets [1].

This laboratory has conducted numerous research on AR technology using 3DCG in the past. We will construct a system that combines AR technology which was one of

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its final objectives and sightseeing which is a characteristic of Miyazaki prefecture and carries out tourism support in this research. This method aims at consumers visiting sightseeing spots to experience AR technology and to reproduce and share the experiences that we have defined it as “Omachikaeri” in any environment.

2. Background
I will talk about Takachiho-cho which is the core in this research. Takachiho-cho is located in the northernmost tip of Miyazaki prefecture and the center of Kyushu, has a scenic natural monument Takachiho Gorge is a city blessed with wonderful nature that is rich in the four seasons. Takachiho Gorge is shown in Figure 1. Also, its origin is old, it is said that the village had existed around 4000 BC [2].

Meanwhile, it is a place of descendants of descendants, and it is regarded as a land with considerable deep connection with Japanese mythology and the birth of Japan. There accompanied the evening Kagura born from the Amanoiwato legend, and the land related to myths exist, and in recent years has attracted more attention to a wide range of power spot[3]. Especially in the Akimoto district called OkuTakachiho, efforts are focused on people living in the village, and efforts to have tourists make experiences in close contact with the village popular. It is possible to touch the shrines using regional ingredients, the environment that talks while feeling nature in an old private house inn, and the shrines and sacred trees standing in majestic nature. The Akimoto shrine is shown in Figure 2. Recently it has been selected as a good example of "Treasure of Discover Rural Mountain Fishing Village" designated by the Ministry of Agriculture, Forestry and Fisheries, and it seems that tourists will increase further in the future[4]. Therefore, in this research, tourism support that visitors who visit regardless of domestic and overseas enjoy the tourist resources as much as possible to maximize the number of repeat customers and new customers will be done.

Fig.2 : Akimoto shrine.

3. Methods
I will explain the technology used in this experiment.

3.1. CG modeling
In this laboratory we produce applications for terminals, and we will cooperate with vocational schools in Miyazaki prefecture for 3DCG model production. Display 3DCG model with AR technology and reproduce the beautiful landscape of the night dance performers and sightseeing spots. Until the model is completed, we will develop a prototype using 3DCG of Miyazaki University's mascot character shown in Fig. 3 [5].

Fig.1 : Takachiho Gorge.

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3.2. Unity3D
We chose Unity3D as a software that can produce applications for mobile [6]. Unity3D is an integrated game development environment compatible with many platforms, and a variety of plug-ins accompanying it are also present. In this time, we selected it from the viewpoint of wanting to develop applications that are not dependent on future developability and OS.

3.3. Selection of API for AR for Unity3D
In this time, I will concentrate on functioning only with the application itself. We aim to create markerless type location-based AR applications in that it does not break the sightseeing landscape and costs marker preparation. A markerless type SmartAR SDK [7], which corresponds to the above Unity3D and satisfies the requirements, was selected. Based on this SDK, we will add location based functions and others.

4. Experiment and Result
I will describe the results of our experiment.

4.1. Development environment
In this research, we made prototype application using Unity 3d and plugin. The 3DCG model used Blender. The portable terminal to use is Xperia Z3.

4.2. Development environment
Figure 4 shows the experimental results. I was able to display Miya Kun's 3DCG model for the natural image added to the dictionary. Once reading the natural image inside the camera, I continued to display the model even at all angles, up and down, right and left. However, when the distance gets away, the unnaturalness of the point where the model turns white and the model itself becomes conspicuous becomes conspicuous.

5. Conclusion
In this research, we tried to make an application using Unity3D. Future tasks include functions of advanced applications such as GPS functions in addition to the functions of SmartAR, creation of other models, and exploring problems for practical use. I want to improve these points and complete it as an actual application.

6. Future plans
In addition to the function of SmartAR, GPS function, model creation, seeking problems for practical use, etc. are completed and completed as an application. In addition, I would like to expand the area beyond Takachiho focused this time. Especially in the production of models, we are currently making intensive work on Tajikarao under construction. The model under development is shown in figure 5.

As a concrete implementation planning function, there is a function that the performance of the 3DCG model with the palm, which is conscious of "Omochikaeri", reproduces Kagura 's dance. The situation is shown in figure 6. In addition to this, we planned functions such as displaying the menu by holding the terminal in the pamphlet so that a beautiful image can be played by tapping, and displaying the 3DCG model reproducing a beautiful landscape when reading the brochure as well.
ing. An image diagram showing a menu from a pamphlet is shown in figure 7.

References


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