Interactive Media Design for Art Museum Guide

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1. Introduction

• **Augmented Reality (AR) and Virtual reality (VR)** have become popular in various applications, and will be used in extremely important roles for culture tourism.

• The study explored the AR and VR as media for providing a **guided tour of the Asia University Museum of Modern Art**.
Why choose the Asia University of Modern Art?

• The designer is Tadao Ando, a Pritzker Architecture Prize winner.
• Tadao Ando is one of the most well-known architect in Taiwan
• The Museum is his only work in Taiwan
• Took around 10 years from conception to completion.
Objectives

- **AR tour-guiding app**-- can help visitors without real guide to learn more about the designs of the Museum.
- **VR tour-guiding app**-- visitors can also download the VR application from the Internet to remotely navigate the architecture.
3. AR tour-guiding- Content design

• Content design is mainly divided into spot scripts design, and virtual guide character design.
• Tour-guiding contents primarily focus on the architecture preliminary
• because displayed artworks are changed every 6 months or so.
5 tour spots have been selected in the Museum
A 3D virtual tour guide was then designed, using the 3D software Maya to create the model and rigid skeleton for animation setting.
The **videos** were taken of the real tour guide according to the contents of the script to provide the **references** for the **animation settings** of the virtual tour guide.
3. AR tour-guiding - Usage design

- Designed 5 different AR recognition markers for each spot.
Examples of marker design
Markers (size 9 x 6 cm) were placed in the museum for AR tour-guide test.
The interfaces of AR tour-guiding app
3. AR tour-guiding- User testing

Subject: 4 college students (2 men and 2 women) performed initial testing.

Preliminary findings:

- **Difficult to notice** that the virtual guide has already appeared.
- **Marker detection failure**— if marker placed near the window, it will create backlight for camera detection.
Virtual tour guide increasing in size for solving difficult to notice

Demo video
4. VR tour-guiding

The VR tour-guiding is divided into 3 modes:

- **Free roaming**: first person view to navigate the museum.
- **Panoramic**: a bird's eye view to navigate the museum.
- **Tour-guiding**: a virtual guide provide introductions of some tour spots.
The VR tour-guiding was based on the hardware HMD HTC Vive, which offers a more immersive experience and allows the user to walk freely within a small area.
To build the 3D digital model of the Museum, the floor plan and façade images of the Museum were first imported into Maya.
• The roof of the Museum and the entrance plaza dorn pictures for the model texturing to improve the realism.
The finished 3D model of the museum
Interior views of the museum
Vive controller-6 axes positioning, 1 trigger, 1 trackpad, 2 grip buttons and 2 system buttons
Instruction interface for 3 modes and teleportation

- **自由模式**: 可随意自由游览。
- **導覽員模式**: 由虛擬導覽員為您做美術館之導覽。
- **全景模式**: 顯示美術館之鳥瞰圖，可俯視整個美術館場景。

按下右搖桿後方按鈕，即可移動自由模式之位置。

壓住移動方向，

顯示主選單

移動位置

不再顯示
Free roaming mode
Instruction interface for panoramic mode

放大

缩小

上下左右旋转

上下左右平移

[Diagram with icons for放大 (zoom in), 缩小 (zoom out), 上下左右旋转 (pan and tilt), 上下左右平移 (pan and tilt and move)]
Panoramic mode
Menu for selecting virtual guide spot
Tour-guiding mode

Demo video for VR tour-guiding
5. Conclusion

• We completed the preliminary versions of a mobile application AR and a head-mounted display VR tour guiding application for the Asia University Museum of Modern Art.

• The visitors could achieve a more convenient, informative, and in-depth understanding of the cultural significance and architectural designs.

• The AR and VR tour-guiding models and methods of production could provide a reference for designing guided tours in other museums or cultural attractions.

• For future research, qualitative interview and quantitative questionnaire surveys can be carried out with additional users to investigate the UX that provide better support and performance for AR and VR tour-guiding in cultural tourism.
Thank you for your attention