

First-person view animation editing utilizing video see-through augmented reality

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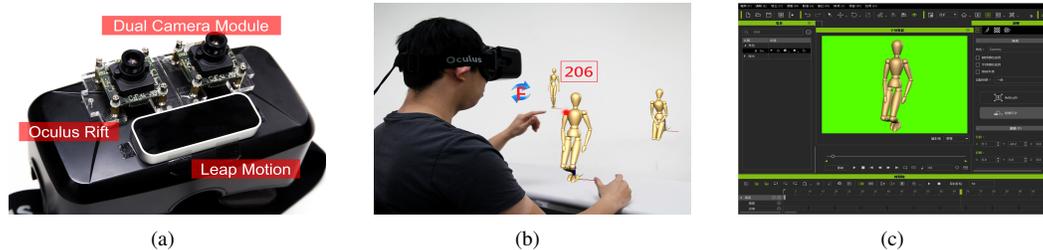


Figure 1: (a) The integrated device of our system. (b) Simulation diagram of user while editing model's posture. The model in 206th frame is editing in the center, and the former and later keyframe models were shown beside. (c) Green screen setting in iClone for chroma keying.

1 Introduction

In making 3D animation with traditional method, we usually edit 3D objects in 3-dimension space on the screen; therefore, we have to use input devices to edit and to observe 3D models. However, those processes can be improved. With the improvement in gesture recognition nowadays, virtual information operations are no longer confined to the mouse and keyboard. We can use the recognized gestures to apply to difficult operations in editing model motion. And for observing 3D model, we would use head tracking from external devices to improve it. It would be easy to observe the interactive results without complicated operation because the system will accurately map the real world head movements.

In our system, with first-person view, users can easily view a

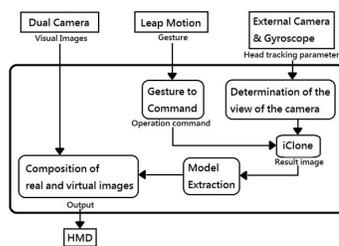


Figure 2: System Flowchart

model's gesture under different angles, avoiding the blind spot caused by physical occlusion. Next, for video see-through, we use dual camera as eyes to catch visual images as background so

as to create more flexible spaces for proceeding image processing. Lastly, with augmented reality, we can implement some props in reality as the movement editing reference to achieve a better placement.

2 Implementation

“iClone” is a general animation production software we chose because it is based on timelines and can provide ready-made figures. Our system structure is shown as Figure 2. There are two devices attached in front of Oculus HMD, a dual camera module for stereo image input and a Leap Motion for gesture recognition. The head pose is calculated by Oculus external device. In the next step, users can use defined gestures to choose one part of model body and to switch operation mode, then use movement of hand to decide the size and direction under each mode. Lastly, the system will extract the needed model with chroma keying from the result of iClone; then composite the model with visual image and finally project to Oculus HMD in real-time.

3 Results and Future Work

We provide an AR animation system that can use the gesture to control. It is closer to our life experience with intuitive operation and observation. For the special pipeline design, our system can be applied into various software, such as MayaBlender ..., etc. Furthermore, we plan to use the RGBD camera, to analyze the visual image's feature and depth information to reconstruct 3D scene model, so the model can not only interact with the user, but also take environmental factors into consideration and make the animation more realistic and interesting. This project is partially funded by MOST 103-2622-E-002-034 (and MediaTek Inc., Taiwan)

References

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