

Cinematography Tutorials in Virtual Reality

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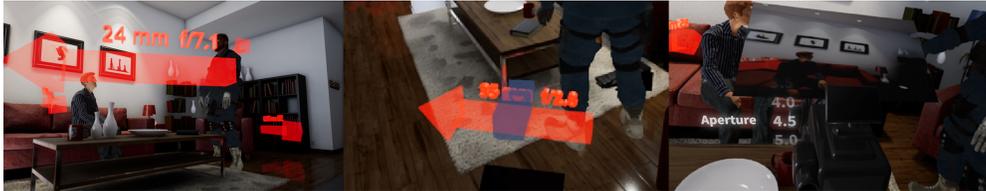


Figure 1: Our system combined the cinematography theories and the practical experience to provide the hands-on drills for the user. For example, users can learn professional camera movements by following the rendered camera path while filming. Also, we implemented the simulation of cinematography equipment for the user to operate in the virtual world.

ABSTRACT

The traditional method of cinematography tutorials often separates the theories from the practical experience. The theory was taught first, thus the students often need to practice on their own after that. However, cinematography equipment is costly and not affordable for most students. In this poster, we introduce a virtual reality tutorial system of cinematography. The system contains hands-on drills and simulation of cinematography equipment. Therefore, the user could learn cinematography in an immersive way through our system and gain hands-on experience at the same time. Our system are and can be adapted to assisting tools for production use, and not just for a tutorial.

CCS CONCEPTS

• Computing methodologies → Virtual reality;

KEYWORDS

Cinematography, Virtual Reality, Tutorials

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1 INTRODUCTION

Great cinematography is sophisticated due to the requirement of intensive artistry and creativity. Although it sounds free, it does contain basic rules and theories. Therefore, we often start from learning the theories. We could obtain the knowledge from the books [Kenworthy 2009], schools or on-line courses, as shown in

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figure(2). But knowing the cinematography theories are not sufficient to produce professional works. The reason is that these tutorials often lack hands-on experience, which is one of the most important parts of the learning process. We have to practice for a long time to convert the knowledge to our own, and then start to create our original works. Although there are several tutorials coming out using 3D animation software recently, there is still a huge difference between operating cameras with hands and a mouse.

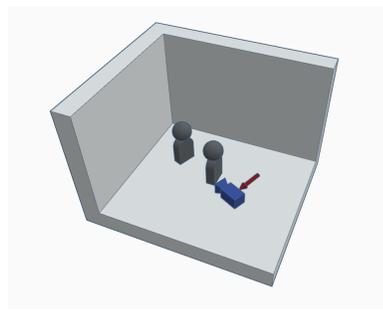


Figure 2: Traditional method of cinematography tutorial.

However, the requirements of the hands-on drill are critical. For example, if we want an indoor scene for dialogue, we need a room with several actors and assistants. Not to mention if we need an outdoor scene for a car chasing shots. Moreover, we need professional cinematography equipment, such as dollies, stabilizer and lighting sets. They are often very expensive and are not affordable for students. Each of the above conditions is not easy to accomplish.

While virtual reality getting more and more popular, the application using it are rocketing through the market. Also, with the increasing power of the GPU, the rendering speed and quality are getting better. We are able to generate photo-realistic scene in real-time. Combining both techniques, we design a VR tutorial system for cinematography. Our system provides hands-on

drills of the theories along with the simulation of the cinematography equipment. Therefore, we could transform the practical film-making work into an affordable and easy-to-use virtual reality application. The user can learn cinematography through an immersive experience.

2 SYSTEM OVERVIEW

Our system contains several tutorials of the cinematography theories. The user can follow the demonstration and learn the skills. Through the visualized tutorial and hands-on drills, the users are able to intuitively operate the virtual camera and set up the scene using the controllers of virtual reality device.

Besides the tutorial, our system contains the simulation of cinematography equipment. Users could design their own scene and try on the equipments according to their creativity. In addition, they can also manipulate the settings of lighting and camera parameters, figure(3b), to create some dramatic and stunning result.

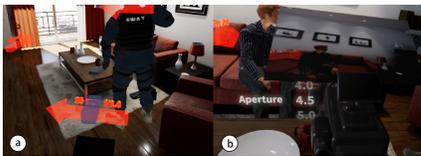


Figure 3: (a)The tutorial provides a ghost camera for user to follow. (b) User can easily modify the camera parameters.

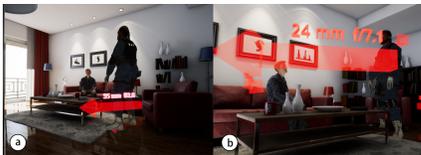


Figure 4: Hands-on drills of our system

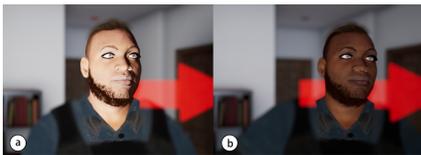


Figure 5: Light settings will significantly effect the emotion of the footage.

2.1 Virtual Reality Drills for Cinematography Theories

We divide the cinematography theories into several scene according to its scenario. Each scene contains a set of camera movements and lighting styles to obtain the desired emotion. Then, we implement the drills from the above information. Each drill contains a virtual scene and a learning target. Users can walk around in the virtual world as if they are at the real filming scene. As shown

in figure(4), which is a dialogue scene. The drills will guide the user by showing where the camera should be placed and how the camera should move. Therefore, by following the tutorial, users could learn the camera movement through the hands-on experience. Also, there is a demo camera which guides the user, as shown in figure(3a). Beside the camera movement, the lighting setup is also visualized in the scene, as shown in figure(5). Users could simply adjust the intensity and position of the light to see how it effects the result.

2.2 Cinematography equipment simulation

There are a variety of cinematography equipments been used during the film-making process. We choose two types of them to add to our system, motion control system and lighting. If we want to get a professional look for our film, we should at least have these two types of equipment. Motion control system such as dollies and stabilizer are used to smooth the camera motion. By removing the handheld shakiness and jitters, we can obtain a more professional result. While lighting improves the quality of the footage and can generates a dramatic look. However, they are not affordable for most of the students. In our system, we simulate the effect of the above equipment. Users could spread their creativity to set up the scenario with the equipment. And validate the result before spending thousands of money to rent or but them.

3 CONCLUSION AND FUTURE WORK

We proposed a VR tutorial system for cinematography. Our system provides a walk-through experience which introduces drills in virtual reality. The users are able to obtain hands-on experience through the immersive tutorial. It provides a more intuitive way to learn the sophisticated art. Furthermore, our system provides simulations of cinematography equipment. Users can set up their filming scenario in the virtual world. It is especially helpful for users such as students or independent filmmakers to try on the costly equipment for both learning and producing propose. The system can also be modified for other tasks in the general filming process. The director can use our system to design the shots during storyboarding, since it has the ability to record the camera movement and scene setups. Moreover, we could generate pre-visualization and a 3D storyboard at the same time. On the other hand, our system can be adapted into an augmented reality version, which can guide the cameraman for the desired camera path. Our system contains high extensibility, and we look forward to developing more features to provides a brand new experience in the field of cinematography.

4 ACKNOWLEDGEMENT

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