



CAMERA CONTROL FOR SHOT SELECTION IN MACHINIMA GENERATED ANIMATION

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ABSTRACT

The development of computer graphics—rendering technology is rapidly increasing—the next-gen game can present 3D images that are closer to reality and can be run in real time. This allows the emergence of a new technique called “machinima,” derived from the words machine and cinema, to make real-time animation movies in a virtual environment. Machinima filmmaking requires a cinematography rule to produce a good animation. A behavior tree is used to select the camera shot according to the cinematography rule using shot idiom such as close-up, back-shot, shoulder-shot, etc. The system allows the camera to decide the proper shot based on events and actions happening in the virtual scene.

Keywords: *Machinima, Cinematography, Behavior tree, Virtual camera, Game, Virtual world*

1. INTRODUCTION

Although current technology has reached a point where the level of realism in games is extremely high, the history of filmmaking has shown the importance of cinematography to better engage with the audience. Audiences have become accustomed to certain conventions in film, and they expect these conventions in any form of visual entertainment.

In a recent form of digital art, machinima, virtual cinematography is more important than before. Machinima refers to the innovation of leveraging video game technology and using pre-rendered 3D images to greatly ease the creation of computer animation [1]. Game engine for modeling human behavior research has been increasing as in [2], also filmmaking using machinima is a complex visual medium that combines virtual cinematography, avatars control, and editing to convey a story. The camera must film the right event at the right time to produce the right picture [1]. Cinematography and editing are both complex art forms in their own right.

However, manually placing the virtual camera can require a great deal of modeling and is a time-consuming effort that must be repeated for each scene [3]. Cinematography depends on storytelling over time, whereas in an interactive virtual world,

the story is developed almost immediately. Because of this immediate reaction in accordance to scene elements, common phrases in cinematography, including framing, composition, motion, etc., can become too complex to be handled by automatic camera control in a virtual environment.

In composing the visual properties of a shot, a cinematographer may vary the size of a subject in the frame or the relative angle or height between the camera and subject. Shot sizes include extreme close-up, close-up, medium, long, and extreme long in which a subject's size in the frame appears progressively smaller or more distant. A filmmaker can also use editing decisions such as shot duration and the frequency of cuts to artful effect [4].

Similar research has been attempted previously, although for different domains and goals. As in [5] present a successful attempt to give the game designer a more robust way to customize the portrayal game and give the user the ability to create complex camera transitions to provide a more engaging game experience. Work by [6] describe some of the established cinematographic techniques. Other works [7] implement a method for various camera movements (pans, tilts, rolls, and dollies).

Based on description above we need to study how to automatically place the virtual camera and