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Establishing the Actor-Audience Connection During Performance on a Virtual Stage

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Abstract: Virtual cultural heritage applications, particularly virtual museums, nowadays include various forms of storytelling. Every object, site or artifact is better perceived and understood through the adjoining story. Interactive applications naturally request the storytelling to become interactive as well. This paper describes the concepts of interactive digital storytelling in our virtual museums and cultural heritage presentations and discusses their advantages and drawbacks recognized through user evaluation. We used digital stories not only to introduce visitors with the context and information on the objects, but also to enhance their navigation through virtual environments with purpose of learning and perceiving maximum amount of offered information.

Keywords: Digital Storytelling, Virtual Cultural Heritage, Virtual Museums, Interactive Storytelling, Qualitative User Experience

INTRODUCTION

“Theatre is live: there’s an immediate chemistry between the audience and the actors on stage that’s tangible.”

One of the main thrills of attending a live theatrical performance is the inherent and subtle relationship between the performer and the viewer. This relationship is dynamic and interactive being formed and evolved continuously as the performance progresses (Walmsley 2011). In distributed virtual theatre (presentation of live performance in shared virtual spaces), a major challenge lies in creating this kind of social connection between audience and actors, who reside in physically distant spaces. (Geigel 2018).

The goal of this demo is to explore the extents by which this chemistry can be recreated in a virtual space even though participants are in different physical locales. Inspired by Farewell to Dawn, which was presented at the 1st Frameless Symposium (Dining, Geigel 2020), we approach this by presenting a dance performance, realized on a shared virtual stage, utilizing full body motion capture to transfer the gesticulation of a physical dancer onto an avatar in the virtual space. We will focus on non-verbal connection using body motion and actor-audience proximity to create the social bond. In addition, we will include the use of spatial audio in the space as an additional mode of potential communication.

PHYSICAL SETUP

The physical setup is illustrated in Figure 1. It involves a dancer, who will be performing physically from the RIT Immersive Audio Laboratory (RIAL) in the College of Engineering Technology (CET) and whose motions will be transferred to an avatar on the virtual stage. This lab includes a 24-channel loudspeaker array that can render a three-dimensional (3D) sound field for immersive auditory imaging, and a 250o wraparound screen for immersive visual rendering with extended horizontal field-of-view (FOV) coverage that will serve as the dancer's window into the virtual space. Spatial audio in the virtual space will be reproduced in physical space and used to attract the attention of dancers during performance.

Audience members will view the performance using VR Head Mounted Displays (HMD). Each audience member will have their own "seat" in the virtual auditorium

and will be represented in the virtual space by an avatar. This avatar will not only be visible to the dancer but also to other audience members in the space.

THE DEMONSTRATION

The demonstration itself will be realized in a virtual world with access provided by an application obtainable through SteamVR. The experience will consist of an improvised interaction between a solo dancer and the audience followed by a preview of a virtual dance performance that is currently under development. The demo will be best experienced when viewed through an immersive HMD (e.g. Oculus, VIVE, or Microsoft MR device). Conditions permitting, we are planning to have HMDs available for use distributed around the MAGIC Center. A WebVR version will be available for those without access to a HMD. We propose a live Q&A session in Zoom after the experience.

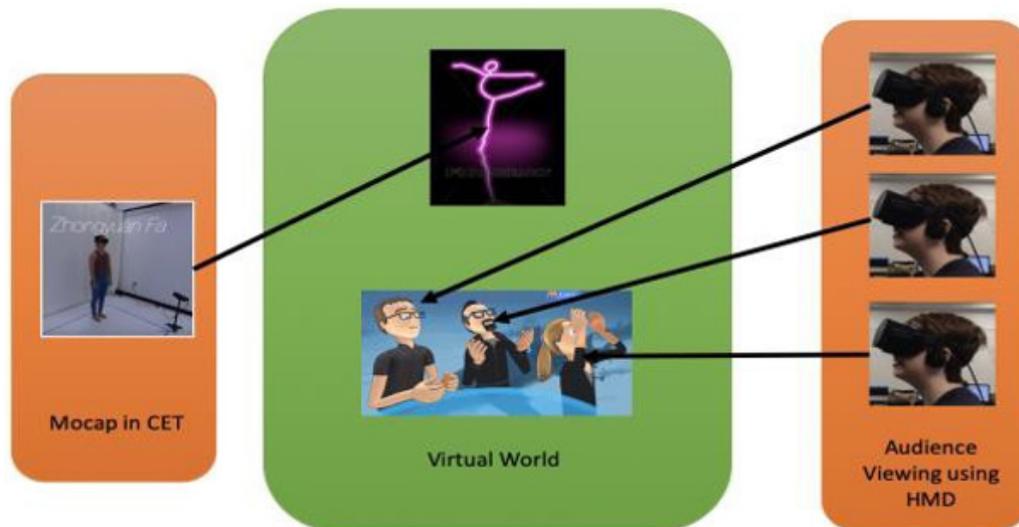


Fig. 1. Physical Setup for the Demo

CREDITS

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Effects: Carson Clarke-Magrab, Boyuan Li;

Mocap: Robin Avenoso, Jennifer Lucas, Emily Jackson, Andrew Chabot;

Multiplayer: Srijan Sharma, Nathan Harding

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