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VR Kino+Theater

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Summary

VR Kino+Theater is a new form of entertainment that brings advanced interactive media technology to conventional spectacle modalities. It incorporates Virtual Reality into Film and Theater. The combination of these three forms of expression results in very powerful collective live experiences that leverages the main strengths of each modality while overcoming individual limitations of each one in isolation. Therefore, *VR Kino+Theater* establishes many possibilities for innovative creative expression which are grounded on the legacy of traditional art forms.

Visual Identity

The trademark of the *VR Kino+Theater* technological platform is show in the Fig. 1 and 2, below.

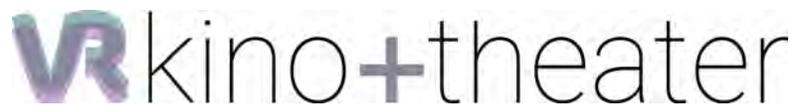Figure 1: Trademark - Compact Form.

Figure 2: Trademark - Extensive, One Line Form.

Overview

VR Kino+Theater is a live experience that uses Virtual Reality technology to combine a theatrical performance with a real-time cinematic presentation in a set-up which also enables many forms of audience participation.

In this scenario, the actors perform on stage supported by a complete VR environment, while the director also on stage defines in real-time the sequence of camera views of the action that is shown on the live movie projection screen. The audience can interact through networked mobile devices. Figure 3 shows the experience space of a *VR Kino+Theater* presentation.

Figure 3: The Experience Space.

The technological platform of *VR Kino+Theater*, introduces three main components into the infrastructure of Virtual Reality, Cinema and Theater. The are related to the roles of the Director, Actors and the Audience and will be described in the next sections.

The VR support is implemented as a Unity Framework. The environment for Multi-Player In-Situ VR experiences is based on Holojam. Unity is also used as the main authoring tool of the platform.

Director

The director controls in real-time the current camera view that is projected on the Movie Screen. See Fig 4 and Fig 5.

Figure 4: Director's Camera Control Interface.

Figure 5: Selected Movie Projection Image.

Actors

Actors play their roles as characters in the Virtual Reality simulation of the story. They are fully immersed into the VR environment, using Head Mounted Displays (HMDs) and sensors for positional tracking, as well as, audio headsets. Each character has an Avatar in the VR simulation that appears on the scene. The body movement of the Avatars is controlled by the actors through the tracking system. The voice of the actors is captured and streamed to the global sound of the cinematic presentation using Mumble Voice Chat System. Mumble has a client-server networked architecture that is shown in Fig 6.
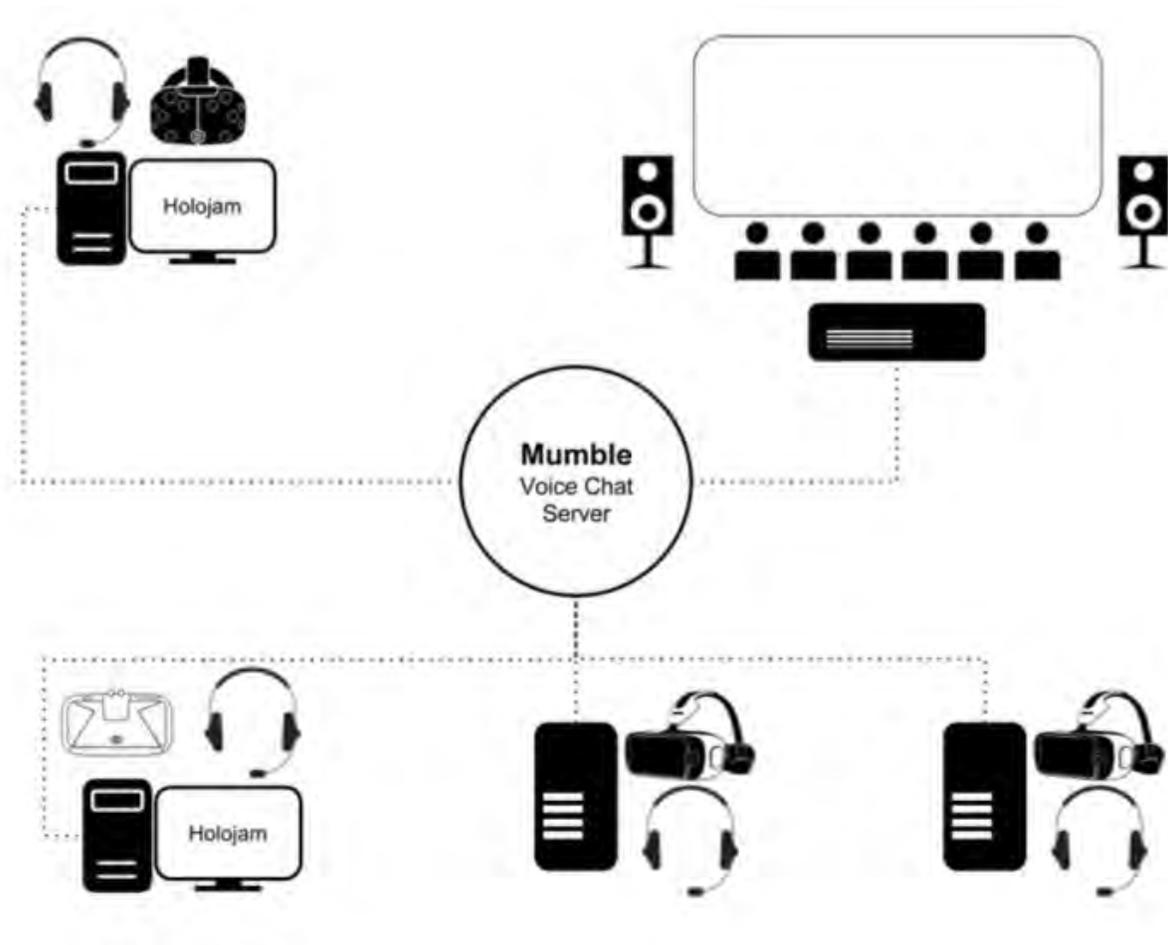

Figure 6: Mumble Network Architecture.

In this set-up, the Mumble server receives individual audio streams from each Mumble client and broadcasts the combined multiplexed audio stream to all clients. This includes the Holojam clients associated with each actor, as well as, the Film presentation client. Fig 7 shows the Mumble server program window.
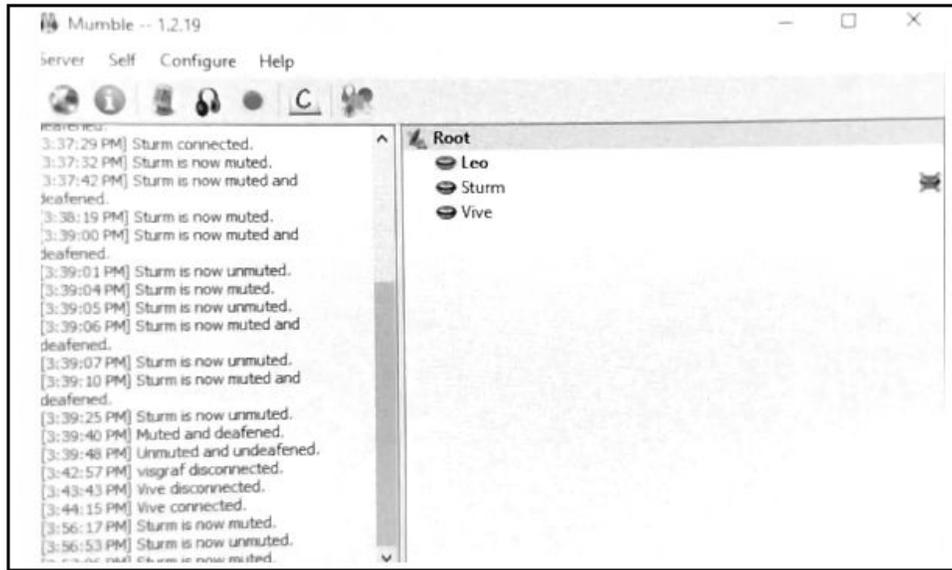

Figure 7: Mumble Server Window.

Fig 8 shows two virtual characters, Elaine and Carlos, in a conversation during the simulation of a VR experience. Fig 9 shows Juliano, the actor that plays the role of Carlos, using the HMD and audio headset.
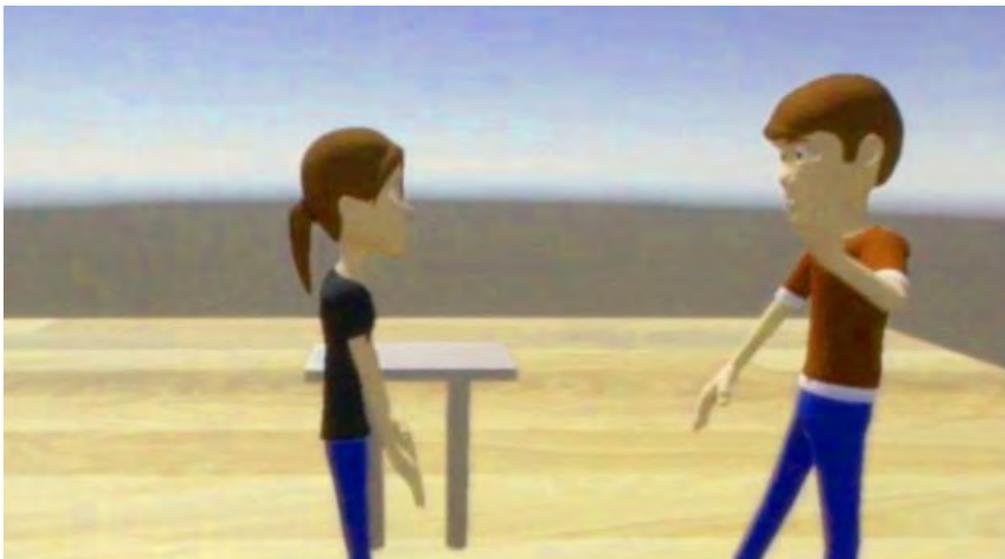

Figure 8: Two virtual characters in a conversation.

Figure 9: The actor Juliano, using the HMD and audio headset.

Audience

The audience can participate in the experience using a *VR Kino+Theater* App that runs on mobile devices. The App allows individuals of the audience to interact with the VR environment in a controlled way. The specific type of interaction is defined by the director using the authoring environment. Essentially, there is support for data collection from the mobile devices of all the participants of the audience. This data can be used collectively in an aggregate form or individually for each participant. The App collects involuntary state information from the mobile sensors, such as motion, as well as voluntary user actions, such as screen touch. This data is sent to the VR server on a time-scheduled basis.

The next figures demonstrate an example of audience interaction. In this VR simulation each audience participant is associated with an emoticon face that appears in the scene when the App is active. The App allows the user to change the emotion of the face by touching the corresponding expression on the mobile screen.

Fig 10 shows the VR scene with the character Carlos and two emoticon face controlled by participants from the audience. Fig 11 shows the App screen in a mobile device and Fig 12 shows the participant touching the interface to change expressions.

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Figure 10: The VR Scene with the Character Carlos and the Emoticon Faces.
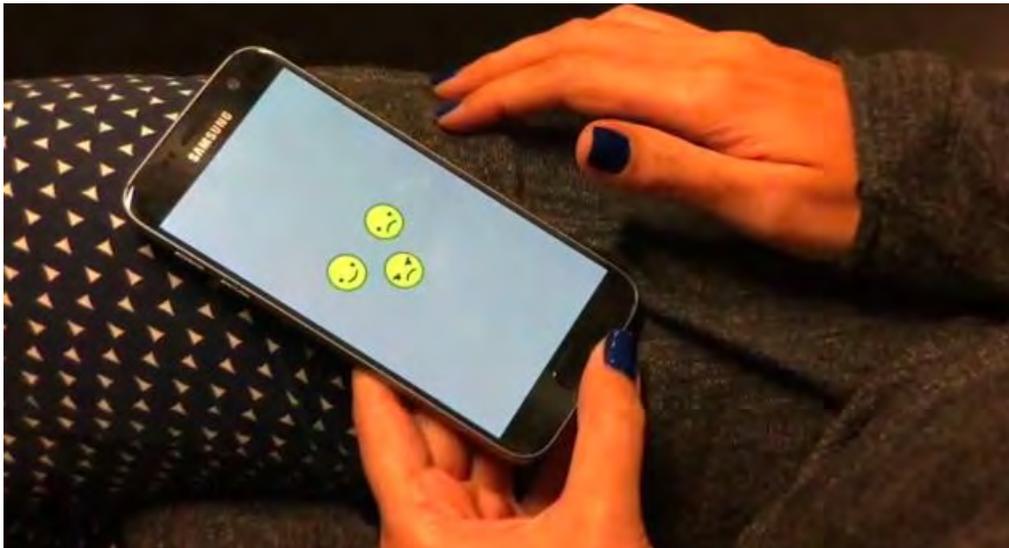

Figure 11: The Mobile App used for Audience Interaction.

Figure 12: Audience Participant Changing Emoticon Face Expression.