Screen-viewing Practices in Social Virtual Reality

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Abstract

This study reports screen-viewing practices in the social virtual reality platform Altspace, based on immersive observations. We identified what type of content is being watched and how the screen content facilitates, complements, or is the focus of social interactions.

Author Keywords

social virtual reality; Altspace; video; social television; watching together; online community; social VR

ACM Classification Keywords

Human-centered computing- User studies

## Introduction

With the proliferation of many online video sharing and viewing platforms like YouTube, Facebook, and Instagram, there is a strong social component where you can interact with people online. Past research has shown that in virtual communities, users want to establish social relationships and that watching videos together enhances one's relationships with others in the group [1,2].

Researchers have also found that virtual conversation when video watching is not limited to the topic of the video, but can extend to personal lives [2]. Studies show that when people are actively participating and conversing when watching a video, they find their
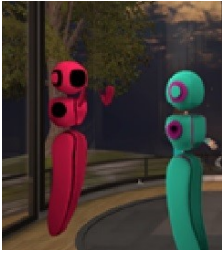
AltspaceVR is an immersive 3D social platform. People can interact with traditional and holographic web content in this virtual reality environment.

Users can choose to have robotic avatars (such as the screenshot above) or avatars that look like people.

Users with headsets and hand controllers can move their head, hands, fingers; users who are not using virtual reality can also participate by accessing the virtual world via PC, but are limited in the motions of their avatar since they don't have gesture input. Users communicate through live audio, emojis, or private messages.

watching experience more enjoyable [1]. While past research has been done watching videos together in an online setting [1-3], little has been explored about watching videos in virtual reality. Virtual reality is an interesting context to re-visit social online viewing practices because it has an element of physical presence due to the use of avatars and a three-dimensional virtual space.

In this study, we studied screen-viewing activities on the social virtual reality platform AltSpace, where users use avatars to attend events. Altspace offers a wide range of environments where diverse events are held. There are public spaces that are open all day, like a campfire or backyard where people can socialize casually. People can also create their portal, which includes different settings for small groups. Featured events have a set time and require prior scheduling with the event creator, or host, having control of many functions in the event. Through attending AltSpace events, our goal was to understand screen-viewing practices within an immersive virtual world. We had three broad research questions:

- RQ1) What are the screens used for?
- RQ2) What types of content are people watching on screens?
- RQ3) How are people interacting with the screen content?

Method

We collected data by attending Altspace events over the period of four weeks. There were three observers, spending a total number of 82 hours in 61 events in Altspace. We had an open-ended approach where we first spent one week attending various events including those for newcomers and determined that watching screens in virtual reality was an interesting topic we wanted to explore further. Then, we choose to observe topic-specific events rather than general socializing events. We coded the observations for types of content played on the screens. We noted the level of interaction, specific behaviors presented with the appearance of videos and other factors such as event settings, contents, and the number of participants. Data was then analyzed through the process of open-coding. Screenshots were taken during events.

Results

Types of Screen Content
There were 3 types of screen content that were seen on Altspace by the observers- live Streams, videos, and slideshows/ information displays. The content displayed on the screens was mostly for entertainment or information purposes.

LIVE STREAMS
One fairly common observation was the usage of the screen feature as a method to display live streams of events that were happening in real time offline. Events that had livestreams for the purpose of information included the Electronic Entertainment Expo (E3) Conference, SpaceX rocket launch, and a NASA announcement about a new finding on Mars. For the most part, people did not interact with each other very much other than to react to the content displayed and were fixated on the screen.

For entertainment purposes, the live streams we observed included a theater performance, live DJ playing music, and a game of Dungeons and Dragons.

Though the theater performance and the live DJ were both entertainment, they were distinct in setting and interaction. The theater performance had people mostly looking towards the screen with some quiet conversation going on while the live DJ event was much more chaotic and had people dancing all over the area of the event while occasionally looking towards the screen.

VIDEOS

Another common implementation of the screen feature was to play videos, mostly from YouTube or recorded events. In an Anime Club event, viewers gathered together to watch episodes of various anime together. While watching, the group focused on the screen and did not interrupt the viewing party to talk other than to react to what they were watching. Similarly, at a Star Trek social event, users watched Star Trek Bloopers on the screen and for the most part did not converse with each other. However, interactivity varied by the crowd; for an event where people were watching funny videos, users would laugh together and talk. Sometimes the content shown was original, such as a festival that solicited contemporary artists to show visual art, which included films.

Music videos were played either for activities like the various Sing Along events for Disney songs or pop songs, karaoke, or as general background music for social events like the Late Night Barbecue (casual discussion event) and Virtual Reality Church (virtual reality mass).

While less common, videos were also used for informational purposes. The World News events played recordings of news broadcasts. In Shane's Editor Part

III, three pre-recorded tutorials taught people how to manipulate objects in Altspace. In some of the events, the visuals did not quite sync with the audio.

Figure 1. Altspace users watching the live stream of a rocket launch. People clapped or expressed emojis after the successful launch.

SLIDESHOWS

Slideshows were only used for entertainment in one instance of the observations. For the Altspace Birthday event (a celebration of Altspace's anniversary), both videos and images of people expressing birthday wishes to Altspace on the anniversary of it being released. The slideshow was used as an introduction before asking people in the audience if they wanted to say anything.

Slideshows were more frequently used for information with some examples being an event where people presented information about user experience design in Virtual Reality, a lesson on cryptocurrency, and a discussion about the SpaceX spacecraft. Each of these used text and images inside the slideshow to help

Above, users are watching a music video playing on the screen as part of an 80s music event.

Below, people gather around a display that shows information about the weather.

convey the information presenters were currently discussing. One thing we noticed we noticed was that when the slideshow had text that was small, people would move closed to the screen in order to see it.

Attention Towards Videos
COMPLETE FOCUS
In Altspace, sometimes there would be events where watching videos were the center of attention of the event. Events like the Anime Club (where people watched anime together), the Cartoon Theme Song Sing Alongs (where people sang along to music videos), and all of the E3 Conferences are examples of events that had the screen content be the main event focus.

VISUAL FOCUS
There were also examples of videos that fulfilled other purposes than the primary focus of the event. In one of the Building the Metaverse events (where a developer discussed the future of virtual reality with people in the audience), the developer was discussing fantasy worlds and playing a slideshow of maps of said worlds behind him. This provided something to look at while the people there listened and spoke with the developer, but was not the sole focus. This also occurred with events that were informational and educational in nature. These events had involved question and answer sessions.

AUDIO FOCUS
Videos also provided a way to play audio to set the mood. Music was essential to the cartoon and Disney sing-along events and music videos w
ere played through the screens. In the Spooky Sunday event, the hosts played music that was themed around

horror. While there was visual to the video, few people looked at it. This was distinct from the Sing Alongs because in these viewers' attention was on the video and the conversations were on the side while in Spooky Sunday there was almost nobody looked at the visuals. In the event 80's New Wave Music Video, few looked at the screen while music videos played. In the Virtual Reality Church event, music was in the background; it appeared to establish a mood for the people present.

Conclusion
The screen feature in Altspace was used for more reasons than just playing videos, it was also used for live streams and informational displays. The various types of functions for screens were used as both the main attraction at an event and as a supplement, by facilitating interactions between people, displaying information, or providing ambiance.

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