Interactive 360 Degree Holographic Installation

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ABSTRACT

With new marketing strategies and technologies, new demands arise, and the standard public relation or salesperson is not enough, costumers tend to have higher standards while companies try to capture their attention, requiring the use of creative contents and ideas. For this purpose, this article describes how an interactive holographic installation was developed, making use of a holographic technology to call attention of potential clients. This is achieved by working as a host or showing a product advertising the company. The installation consists in a 360 degree (8 view) holographic avatar or object and optionality, also a screen, where a set of menus with videos, images and textual contents are presented. It uses several Microsoft Kinect sensors for enabling user (and other persons) tracking and natural interaction around the installation, through gestures and speech while building several statistics of the visualized content. All those statistics can be analyzed on-the-fly by the company to understand the success of the event.

KEYWORDS

Computer Vision, Gesture Recognition, Holography, Human-Computer Interaction, Interfaces, Kinect, Sound

INTRODUCTION

No matter what field a company works on, the most important of its marketing strategies is costumer acquisition. Nowadays the first contact between a company and a client is mostly over their website, presenting on it a critical and precise information on what it has to offer, but often leaving unanswered questions or not capturing the client’s total attention at all. Exhibitions and other events are often a great place to get new clients, with companies making their presence through a small group of Public Relations, relying then on creative ways for standing out from other present companies. However, nowadays with technological advances this doesn’t seems to be enough.

This paper presents a creative holographic installation that combines Pepper’s Ghost holographic technique (Sprott, 2006) with natural interaction (NI). The installation consists in a new 360º (degree) holographic representation of volumetric avatars or objects, and optionality also a screen where a set of menus with videos, images and textual contents are presented. It uses several Microsoft Kinects

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(Kinect, 2014) for enabling natural interaction through gestures and speech while building several statistics of the visualized content, number of people around the installation. The hologram can work as a 360° host that follows user movements or shows the advertising of a product of the company or even a face.

The main contribution of this paper is a full 360° holographic interactive installation, consisting in: (a) a new proposal for the 360° holographic representation (8 views installation with “no discontinuities”, between views), the (b) user tracking as well as other persons around the 360° installation. The system allows tracking persons between Kinect sensors, 8 in the case, placed in a circle, which can acquire a 360° view of the environment. (c) The interaction and navigation, achieved through gestures or voice commands by selecting the appropriate Kinect (combined with the building on-the-fly of several statistics).

In this section an introduction was made, in the next section the State of the Art is presented. In section Installation Overview, the structure of the installation is introduced, while in section Interaction and Statistics Components is explained the developed work of the natural interaction, people tracking, statistics, and is explained briefly the data storage. In Tests and Results an overview of the results and the prototype installation is presented. Finally, the conclusions and future work are presented in the last section.

This work was done in conjunction with a creative technological company: SPIC - Creative Solutions.

STATE OF THE ART

Several applications or installations have been already developed through the years using holography (Mihaylova, 2013). One of the most popular techniques is Pepper’s Ghost, due to it’s simplicity of creating a hologram illusion just by reflecting an image using an acrylic or mylar foil placed by a 45° angle from that image, displayed on a LCD or on a surface via projector. Figueiredo, Cardoso, Gonçalves & Rodrigues (2014) uses it to teach 3D mechanical parts design to students. In the music business have been applying it to create concerts with dead artists, with the Tupac concert (Rennie, 2014) being one of the most famous. Also, Flyway (2015) makes use of Pepper’s Ghost technique, being able to present a music concert with two holographic musicians. Virtual public relations is also featured in a holographic form, whereas AVA (Advanced Virtual Avatar) uses a real size person in a holographic form (AVA, 2015).

Sensing Hologram Installation from D’Strict 3D (D’Strict, 2015), enables interaction through gestures with a hologram and a monitor placed inside a box, but is only visible in one perspective. The Active8-3D (Active8, 2015) features a medium or a large hologram only visible when placed in front of it, allowing very limited interaction. Another solution offered by them is a 3D-Holopyramid with the advantage of being visible in 360° with 4 views due to its pyramidal shape.

Vizzo also offers a solution on this matter with Cheoptics360 product (Vizoo, 2015), also with 4 different views - pyramid, showing an object as a hologram using Pepper’s Ghost, but it also offers no interaction. More examples exist, e.g., Lifefact Magic Displays (Lifefast, 2013) uses a high speed rotating mechanical system to build such hologram, increasing the maintenance required. This installation doesn’t offer interaction with the users, Paradigm (Rearpro, 2015) and more recently Holus (Holus, 2015) presents a see-through tabletop box (pyramid), offering a user interactive 3D digital world. Authors’ previous work with a frontal holographic installation can be seen in Alves et al. (2015b) and the commercial version in PHolo (2015).