

Final Project Proposal:
Art and Technology

1. Title page

AUDIOVISUALY EXPERIENCE THROUGH IMAGE HOLOGRAPHY

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ABSTRACT

Today in interactive art, there are not only representations that speak of the body but actions and behaviours that involve the body. In digital holography, the image appears and disappears from the observer's vision field. Holographic image is light thus we can see multidimensional spaces, shapes and colours existing at the same time, presence and absence of the image on the holographic plate. As the image appear to flow in front of the plate, sometimes viewers try touching it with his hands.

That means, to the viewer will be interactive events, with no beginning or end that can be perceived in any direction, forward or backward, depending on the relative position and the time the viewer spends in front of the hologram.

In this workshop we propose to develop and present an audio-visual interactive installation composed by four digital holograms and spatial soundscape. When viewers move in front of each hologram, different sources of sound will be trigger. The outcome will be presented in the last week of July with an invited performer. We are looking for sound designers and interaction programmers.

Keywords: Digital holographic image, holographic performance, sound spatialization, motion capture

2. Background information

A hologram is obtained with laser light and made by two sets of light waves. A set of light waves is reflected directly in the film by an object to be represented, the other set of waves reaches the film coming from a different direction. When the two sets meet they produce fringes of interference. The intensity of this interference figure will be recorded in the holographic film. After the chemical processing of the film, a hologram containing the complete amplitude and phase information of the two sets of interfering waves is obtained. The interference fringes that constitute the hologram, when properly illuminated, produce a 3D image.

One of the key issues, which is important to note, is the difference between hologram and holographic imaging. The hologram is the glass or acetate plate recorded and subsequently revealed. The holographic image - only appears when the hologram is correctly illuminated and the viewer is located in the parameters of the zone of its visualization. Holography is the technique or the medium, its product is the hologram.

A hologram may or may not reconstruct the recorded image, depending on the lighting conditions and the viewers' position.

With developments in holography leading to the digital holograms that can reproduce full colour and the 4D, the possibility of this medium to a bodily exploration has been stressed.

According to our work ⁱ, a viewer in front of a digital holographic image becomes a reflection of engagement creating a performance, this means the viewer's movement is creating a temporal identity between the image seeing and the act of seen. In that way we are considering a performance space created by the holographic image, the viewer and the space in between.

3. Project objectives

In this workshop proposal we intend to create and present a spatial soundscape activated by the movements of the viewers in front of the holographic images. Four holographic images have previously been printed. During the workshop two experimental modules will be developed: one to gather and analyse motion information and a second to render spatial sound. The installation will be tested during the last week.

4. Detailed technical description

We need to use the Vicom Motion Capture System, from the Digital Creative Centre, if possible, to the motion capture from the viewer's body movement, top-down, back-forward, balancing arms, moving heads, in front of each holographic plate.

Working with sound designers in order to collect, build and select the sounds that we can have in the room through the microphones.

5. Work plan and implementation schedule

Task 1 – week 1 and 2

Spatial Sound Module – Working with the sound designer in order to select and compose sounds.

Motion Extraction Module – SW module to detect presence and position of viewers near holographic prints

Task 2 - week 2 and 3

Setup installation:

Placing holograms on the wall, with the lamps on the appropriated distance and angle of lighting, for each hologram.

Working with interaction programmers:

Experiments placing Webcams and microphones.

Experiments with spatial soundscape.

Task 3 – week 3 and 4

Experiments with Webcams and microphones, in order to decide which sound belongs to each microphone, and which sounds are near each hologram.

Experiments with only one person in the space.

Experiments with several persons in the space.

Task 4 – last week, week 4

Installation should be ready to play, free access to the audio-visual interactive installation composed by four digital holograms, spatial soundscape and viewers. Only with the movements of viewers in this space does the soundscape work.

The outcome will be also presented with an invited performer.

The possibility of record movies of these actions.

6. Benefits of the research

The outcome of this project is to offer the opportunity to the public to have an audio-visual experience through digital holographic images in order to deeply explore the features of that kind of images that are unknown by almost people.

7. Profile team

Maria Isabel Azevedo – PhD, Senior Researcher at ID+ Research Institute for Design, Media and Culture, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal.

Isabel Azevedo is a multimedia artist who investigates the relationships between art, science and technology. Having light as a subject matter, she produced and presented multimedia environments and holographic installations, and is exploring the artistic performance potential within holography.

Isabel Azevedo presented her artistic work in places like, 2000 - TAGV, Coimbra, Portugal; 2005/06 – Museu Grão Vasco, Viseu, Portugal; 2000 - Stadtmuseum, St. Pölten, Austria; 2011 - Gallery 286, London, UK; 2011/17 - SPIE's Photonics West, San Francisco, USA; 2014 - Kinetica Art Fair, London, UK; 2015 - Surreal Vintage, London, UK; 2015 - Eliseev House, Saint Petersburg, Russia; 2015/16 - The Manor Saltykov-Chertkov, Moscow, Russia.

Revelation Prize in 1º Biennale of Art of Sintra, Portugal, September 1987.

Shearwater Foundation Grant, USA - July 2000.

She has published and given talks in several international conferences.

From 2010 until 2016, she was Post-doctoral researcher from Fundação da Ciência e Tecnologia, in Art Studies – Digital Holography, at the Department of Physics and Astronomy, Faculty of Sciences, University of Porto, Portugal and De Montfort University, Faculty of Technology, The Imaging & Displays Research Group, Leicester, UK.

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Elizabeth Sandford-Richardson - BA, University of the Arts, Central Saint Martins College of Art and Design, Granary Building, 1 Granary Square, Kings Cross, London N1C 4AA, UK.

Elizabeth is a Performance artist working with a cross range of mediums, including experimental darkroom photography 'Performergrams', 'Lenticulars', Digital Holography and Live Performance. The performance captures the idea of photography, subsequently refining a visual and conceptual vocabulary that emerged through the focus on using holography and lenticulars performativity. Challenging the notion of what can be seen as a performance space.

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Francisco Carneiro Pacheco – Graduation from Sound and Image Course, The Catholic University of Porto, the School of Arts, Portugal.

Co-Founder & Creative Director at Junta, media production, Junta Digital.

I've worked as producer, director, assistant director and editor on several media and film productions.

In Portugal I directed and edited short films, music videos and corporate videos. In Brazil I've worked as assistant director in leading productions in Rio de Janeiro, including the highly successful Brazilian feature: "O Primo Basílio".

I've then moved to London focusing on Online Media Production, working in leading world companies, such as CBS Interactive, Google, Flixmedia and LivingSocial.

Despite the fast social and cultural transformation in the digital era, the media is still deeply rooted in good storytelling: good stories with high production values that need to span online, film, TV, radio and gaming to engage audiences.

Specialties: Cinema, Advertising, Online Media, TV, Digital, Social Media, E-commerce, corporate video, transmedia

Nuno Miguel José Janardo – PhD Candidate Contemporary Art History - *Holography as an Artistic Practice in the 20th and 21st Centuries*, University of Lisbon, Institute of Art History.

2015 - Oral Presentation from the Paper, *Artistic holography as a typology belonging to the virtually three-dimensional arts*, International Symposium on Display Holography - ISDH 2015, ITMO University, Saint Petersburg, Russia.

Martim Nunes Pinto – Undergraduate Student of the Sound and Image Course, The Catholic University of Portugal in Porto, the School of Arts.

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