Development and Implementation of Projection-Based Installation in Gallery Space and Visitors Experience

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Abstract*: *In this paper, we present a projection-based installation designed for gallery-based exhibition. The installation system based on the Spatial Augmented Reality or known as "SAR," in which digital images were projected onto real objects or materials using projectors such as projection mapping techniques. This project studied the use of digital technology for gallery exhibition installation works to enrich and create an engaging audience's art experience through an immersive space created through SAR application. The study involved 79 youth who responded about their experience after viewing the projection-based installation work through a questionnaire survey. The findings show that the use of digital technology to the installation creates dreamlike scenes, imitating nature ambiance complemented with visuals and sound and well provides immersive experience among the visitors through the mixing of virtual images with real objects. The significance of this research on SAR application in exhibition artworks is essential to understand how it affects the audience's experience. The results are necessary as contributions for the development of innovative art mediums intended for gallery-based exhibitions and visitors' engagement, mainly targeted among the youth as the modern audience.

Keywords* : *projection-based installation, Spatial Augmented Reality, immersive experience, gallery exhibiton

I. INTRODUCTION

Spatial Aaugmented Reality, or known as SAR environments, is achieved when virtual content projects onto real physical objects. It does not require viewers to wear devices to view the virtual content or to experience the illusions it created. The SAR application, also sometimes referred to as projection-based AR or 3D projection mapping, appears to be a suitable strategy to create an immersive environment in gallery space to enrich audience art experience when viewing exhibited artworks [1]. Results from this, the real-world objects' appearance will alter in many different ways according to the projected virtual images[2]. It can be in the form of animation, live videos, or still-images play in sequences. There have been many projects that used SAR to augment physical objects with additional information, but not many studies on visitors' experience highlighted. Therefore the focus of this paper is to study how projection-based exhibition work may influence visitors' experience. The aimed is to seek it's potential to stimulate the audience and influence them to feel immersed with the environment created from mixing both the virtual images and the real objects. The immersive spaces created with the presence of visuals, sound, and light may engage the audiences' perceptions into temporal illusions of alternative virtual worlds[1]. For this purpose, we designed a projection-based installation, which then we exhibited to a group of audience and evaluated their experience through the questionnaire method.

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II. INSTALLATION DESIGN

A. Motivation

In Sarawak, Malaysia, exhibitions mostly relied on visual content to explain art and objects where the spectators or visitors mostly familiar with traditionally looking. However, as the growing use of technologies in arts, it changes and enables opportunities in the way we experience art. Thus, local artists may adapt to these recent trends to create memorable exhibition artworks that fit with the current demand from the modern audience to experience art in a new way.

B. Design Concept

Nature floral inspires the visual installation concept. We wanted to bring the nature world presence and feels into the gallery space. Regard to this intention, we choose to use SAR to create a dream-like environment by combining both virtual and real together. This combination allowed the audiences to identify visually extended space through a virtual image projection in which the method can advantage to improve their immersion with the artwork [4]. The purpose is to transport visitors into an imaginative world of nature, where we tried to highlight on multisensory of touch, hear, physical contact, and smell.

C. Implementation

The installation's system is mainly composed of a computer, a projector, and a speaker system. The specifications of the devices shown in Table I. We use Autodesk Maya, an animation software to construct the visual images and Adobe After Effects, a post-production software for visual post-processing into the desired images look and feel.