

Virtual Photography Exhibition as a Digital Platform and Database in Virtual Reality

Nurul Akmalia¹, Irpan Riana², Muhammad Halim³, Laelatul Pathia⁴, Putri Surya Cempaka⁵,
Rezki Gautama Tanrere⁶

{nakmalia@polimedia.ac.id¹, irpan_riana@polimedia.ac.id², mhalim@polimedia.ac.id³}

Politeknik Negeri Media Kreatif, Indonesia^{1,2,3,4,5}
Universitas Multimedia Nusantara, Indonesia⁶

Abstract. Photo works are included in art that need space to appreciate their work. Photography students are required to produce works during their studies, especially final assignments. However, the obstacle that is often faced is the lack of an adequate platform to exhibit these works widely and easily accessible. With the existence of digital, this study will discuss the process of Creating an E-Exhibition Platform for Final Project Photos of Photography Students as a Digital Exhibition Space and database in the form of Virtual Reality. The aim is as a place to appreciate the final project work of photography study program students, Digitization and organizing the final project database of photography study program students. The use of virtual reality technology has been very massively used in the photography industry and this study tries to adopt this technology in maximizing learning methods at Polimedia. By collaborating with partners, the manufacturing process includes pre-production, production, and post-production. By using virtual reality and animation technology, this study produces a virtual photo exhibition space that can accommodate as many as 100 Photo Works of photography students that can be accessed from anywhere and anytime.

Keywords. Virtual Reality, Photography, Digital Platform, E-Exhibition, Exhibition

1 Introduction

Artworks, including photography, are mediums that require exhibition space to be fully appreciated by the public [1]. In the context of photography education, Photography study program students are faced with the demands to produce work during their studies, especially in the form of final assignments. One of the challenges often faced is the limited physical space to exhibit these works [2]. With the development of digital technology, there is an opportunity to overcome this obstacle through virtual exhibitions. The creation of an E-Exhibition platform equipped with Virtual Reality (VR) technology can be an innovative and relevant solution for exhibition space and digital storage of students' final assignments [3].

This study attempts to answer these needs by designing and building a VR-based photo E-Exhibition platform. This platform, in addition to being a digital exhibition space, also functions

as a database to document students' works. In this study, we focus on the process of developing, implementing, and testing this platform to ensure its ability to accommodate as many as 100 final project photos of students that can be accessed anytime and anywhere.

2 Method

This research uses a development approach consisting of several stages, namely pre-production, production, and post-production. In the pre-production stage, the system and platform are designed by considering the needs of students and exhibition audiences. The production stage includes the implementation of virtual reality technology and animation integration to create an interactive digital exhibition environment [3]. Post-production provides testing and evaluation of the platform by students and industry partners who collaborated on this project.

2.1 Pre-Production

The initial stage of the platform development involved feature planning and interface design. The selection of virtual reality technology was a key consideration in creating an interactive and immersive showroom. In addition, 3D modelling and animation were used to enrich the visual experience within the showroom [4]. Curation and classification two photo categories: Commercial and Journalism.

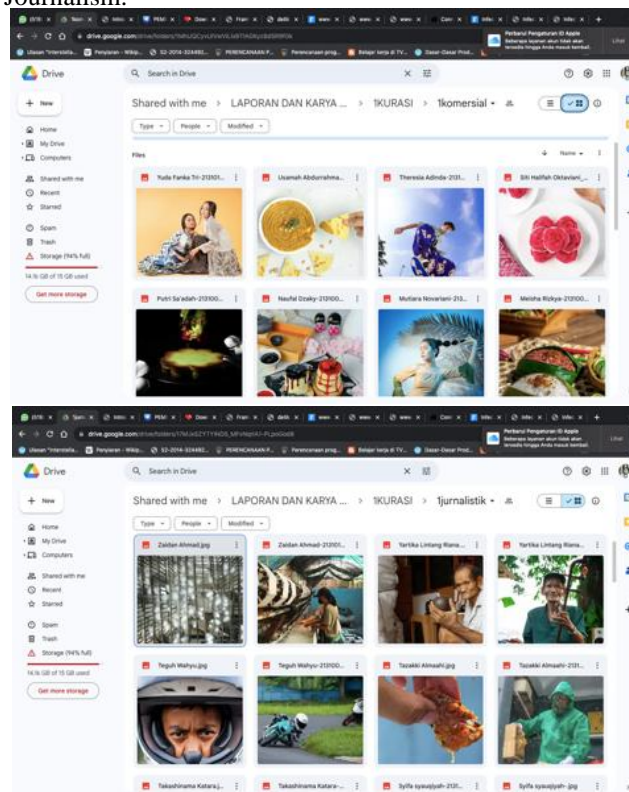


Fig. 1. Curated Photo (Commercial and Journalism)

2.2 Production Process of the Photography E-Exhibition

In this stage, the E-Exhibition platform is built using VR development software such as Unity and Unreal Engine [5]. Each student's photographic work is optimized in digital format to be displayed in a virtual space. This technology allows users to interact with the exhibition through VR devices, thus providing an experience like walking around a physical gallery [6].

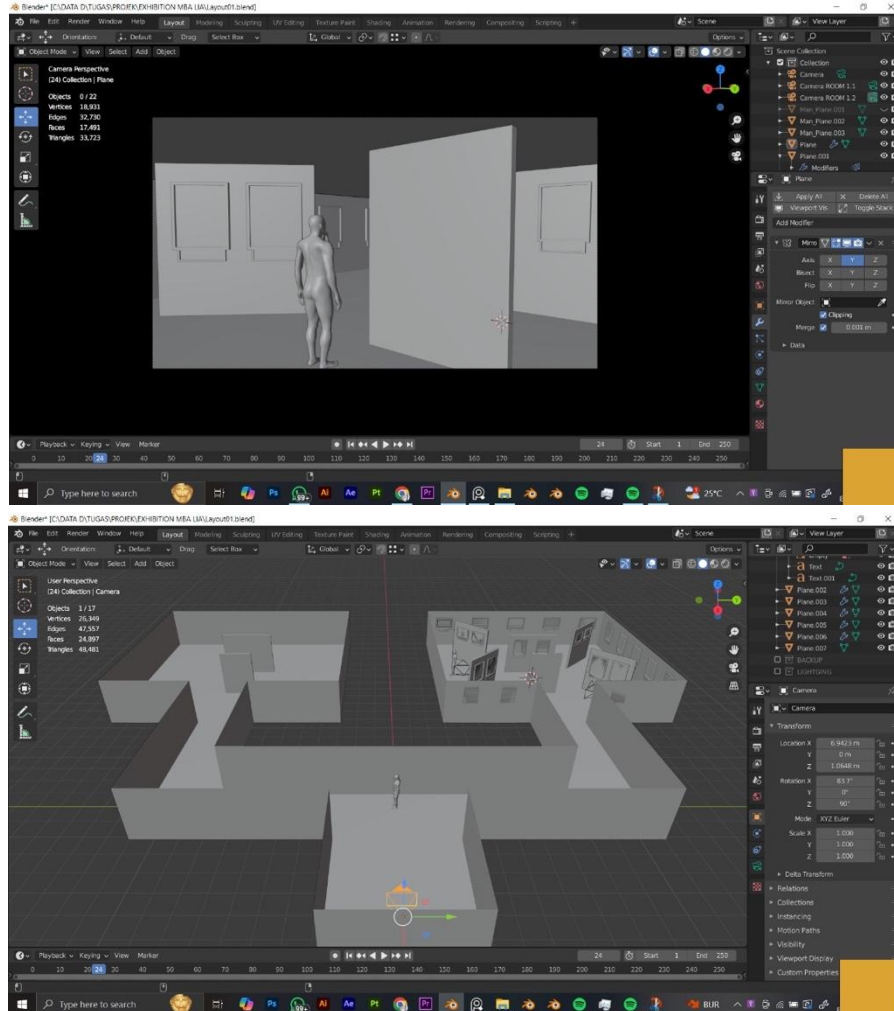


Fig. 2. 3D Layout Gallery Concept

2.3. Post-production

Once the platform was built, testing was conducted to evaluate the performance and functionality of the system. The photographic works displayed in the virtual showroom were checked for visual quality. Accessibility testing was conducted involving users from various locations to ensure the platform was globally accessible.



Fig. 3. Testing The Virtual Gallery Using VR Tools

The implementation of VR technology demonstrated a clear advancement in how photography exhibitions are conducted in the digital era. The immersive and interactive elements bridged the gap between traditional gallery experiences and online accessibility [7]. Moreover, the platform proved to be an effective learning tool for students, familiarizing them with cutting-edge exhibition practices and offering a professional medium to present their works to broader audiences. The study also emphasized the importance of collaboration between departments, combining expertise from communication and graphic engineering to deliver a multidimensional project. While the results were promising, future iterations could explore additional features such as augmented reality (AR) elements, interactive narratives for journalistic photos, or commercial galleries that simulate real-world branding campaigns.

3 Result and Discussion

3.1 Result

The E-Exhibition platform that was built successfully accommodated up to 100 final project photographic works of Photography study program students. Users can access this virtual

gallery from various devices, including VR devices, computers, or mobile phones. VR technology provides a more immersive experience, where users feel as if they are in the actual gallery space. This provides a greater appreciation of the photographic works exhibited, compared to the traditional digital exhibition format. In addition, this platform is also equipped with a database system that makes it easy to organize and search for student works by year, theme, or category.

The Virtual Photography Exhibition successfully served as a digital platform that combined VR and 3D animation technologies to create an immersive and interactive experience for showcasing students' photographic works. The platform accommodated up to 100 photos, divided into two categories: Journalistic and Commercial, each showcased in their respective sections within the virtual gallery. This division enhanced the thematic organization of the exhibition, allowing viewers to navigate through different styles and purposes of photography seamlessly.

Performance and Accessibility

The VR-based exhibition allowed users to experience the gallery as if they were walking through a physical space. Features such as spatial interactions, realistic textures, and lighting contributed to an immersive experience. The exhibition was tested on various devices, including VR headsets, PCs, and mobile devices. Feedback from users indicated a high level of satisfaction with accessibility and the realism of the gallery environment.

Impact on Learning and Appreciation

This platform addressed the critical challenge of limited physical space for exhibitions. By adopting VR technology, it not only broadened the accessibility of students' works to a global audience but also encouraged greater appreciation by providing an engaging medium for viewing. Students gained exposure to digital exhibition techniques and a deeper understanding of how modern technology can enhance art presentation.

Database System Integration

A robust database system was incorporated, enabling efficient organization and retrieval of photographic works. Users could search for photos by year, theme, or category. This system also served as a digital archive, preserving students' works for future reference and ensuring long-term accessibility.

Journalistic and Commercial Categories

The separation of photos into journalistic and commercial categories showcased the diverse talents of the students. Journalistic works focused on storytelling and documenting real-world events, while commercial photos highlighted creativity in marketing and advertising. This categorization helped engage varied audience interests, further enhancing the educational and professional relevance of the exhibition.

3.2 Discussion

The implementation of VR technology demonstrated a clear advancement in how photography exhibitions are conducted in the digital era. The immersive and interactive elements bridged the gap between traditional gallery experiences and online accessibility. Moreover, the platform proved to be an effective learning tool for students [8], familiarizing them with cutting-edge exhibition practices and offering a professional medium to present their works to broader audiences. The study also emphasized the importance of collaboration between departments, combining expertise from communication and graphic engineering to deliver a multidimensional project. While the results were promising, future iterations could explore additional features such as augmented reality (AR) elements, interactive narratives for journalistic photos, or commercial galleries that simulate real-world branding campaigns.



Fig. 4. Virtual Gallery Commercial Photo (Left) Journalism Photo (Right)

The use of VR technology on this platform has proven to provide a solution to the limitations of physical exhibition spaces that have been an obstacle. In addition, this platform is also a new learning medium for students, where they can understand how digital technology can be used to expand the reach and appreciation of works of art.

4 Conclusion

The development of a Virtual Reality-based E-Exhibition platform for photography students' final project photo exhibitions is an innovative solution that can overcome the limitations of physical exhibition space. This platform not only provides a wider appreciation space but also provides a well-organized database system. The use of VR technology in visual arts education, especially photography, opens up new opportunities to develop more interactive and modern learning methods. The results of this study indicate that the VR E-Exhibition platform can provide an immersive experience for the audience and can be accessed globally, thus providing great benefits for both students and the wider community.

Acknowledgement. This work was supported by The Center for Research and Community Service of Politeknik Negeri Media Kreatif.

References

- [1] Rachmawati, I., Iriani, D., Mutohari, A.S., Solihah, Y.A., Parman, S.: Seminar Makna Keindahan dalam Visual Karya Fotografi Seni pada Pameran Seni Rupa Kuningan Biennale Niaga. *Jurnal Pengabdian UCIC*. 36-44 (2022)
- [2] Tambahani, G.S., Wenas, M.B., Somya, R.: Perancangan Online Virtual Gallery dengan Teknologi HTML5. *Jurnal Teknologi Informasi-Aiti*. 15-30 (2016)
- [3] Nurcahya, S.B., Pringgabayu, D., Sujana, N., Nurdiansyah, A.: Analisis Desain Eksepsi Museum Digital Hortikultura di Kabupaten Purwakarta. *Jurnal Tekomin*. 63-77 (2023)
- [4] Vlah, D., Cok, V., Urbas, U.: VR as a 3D Modelling Tool in Engineering Design Applications. *Applied Sciences*. (2021)
- [5] Mishra, O., Raj, A., Singh, J., Singh, A., Chauhan, N., Kaur, N., Sehgal, S.S.: A Study on Game Design and Development using Unity and Unreal Engine: A Comparative Analysis of Features, Tools, and Performance. *Journal of Harbin Engineering University*. 1292-1301 (2023)
- [6] Setyawan, R.S., Hidayat, M.M., Febrianti, L., Firmansyah, M.A.: Implementation of Virtual Reality for Photography Exhibitions. *JEECS*. 49-54 (2023)
- [7] Rodriguez, M.L., Perez, V.R., Rodriguez, A.F.L.: Immersive and Virtual Exhibitions: A Reflection on.... Art?. *Arts & Communication*. 1-24 (2024)

[8] Sahabuddin, E.S., Makkasau, A.: Utilization of virtual reality as learning tool to increase students' pro-environmental behaviour at universities. *Eurasia Jpurnal of Mathematics, Science and Technology Education*. 1-17 (2024)