Exploring Augmented Reality as an Artistic Tool: A Workshop-based Study with South Korean Artists

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Abstract

This research aims to democratize AR within the South Korean artistic community, emphasizing the liberation of the creative potential it offers to artists. Through a series of workshops, established artists from diverse disciplines created AR artwork prototypes that unveiled the affordances of AR as an artistic medium. Our findings illuminate AR's transformative potential across artistic domains, from preserving live performances and enhancing memories to fostering interactive educational experiences and bridging diverse art forms. Additionally, a subset of our participants mobilized AR as a promotional tool for and a means to extend reality, enriching storytelling in exhibitions and performances. This research contributes to the democratization of AR creative practice, expanding the grammar of artistic expression.

Keywords

Augmented Reality (AR), Workshop, AR storytelling,

AR design, Practice-based Research

Introduction

Augmented Reality (AR) has emerged as an increasingly ubiquitous technological medium, transcending various domains and industries, and has recently gained significant traction in the realm of art [1] [2]. AR offers a multidimensional platform that empowers artists to transcend conventional boundaries, enabling the fusion of visual, auditory, and interactive elements [3]. However, artists often face challenges when seeking to harness the potential of AR, primarily due to technical intricacies and limited accessibility.

This research project aims to democratize AR as an artistic medium within the South Korean artistic community and aspires to develop a framework for the creative potential that AR embodies. Through a series of workshops, Korean artists representing diverse disciplines, including music, theatre, design, literature, visual art, interactive art, photography, and film, created AR artwork prototypes. Their endeavors have uncovered the latent potential of AR as an artistic medium, transcending conventional limitations and unlocking innovative avenues of artistic expression. Furthermore, where other projects have explored "novices" to AR as a homogenous population, this project specifically focuses on established professional artists as a unique "novice" group to AR design.

The findings from the workshop illuminate the potential of AR across diverse artistic disciplines, presenting how AR can preserve live performances, enhance memories, and facilitate music education, bridging diverse art forms while promoting engagement and curiosity. This research demonstrates the diverse artistic languages and expressions that AR facilitates within the South Korean artistic community.

Related Work

Efforts to democratize AR technology have gained considerable momentum, aided by pioneering initiatives. The AR-ToolKit, an open-source software library, stands as a seminal contribution that significantly reduced technical barriers to AR development [4]. The democratization of AR authoring tools is crucial because it empowers artists, creators, and educators to craft AR experiences without extensive technical expertise, lowering the barriers to entry in the realm of AR content creation [5]. Platforms such as "Artivive" have substantially democratized AR within the realm of art, ushering in an era where artists can integrate AR enhancements into their creative works [6].

The prominence of workshop-based research in the domain of art and technology has grown significantly, exemplifying a method to foster collaboration and experimentation with artists and/or students. McArthur explored AR as a storytelling technique specifically for journalism mobilizing a workshop methodology [7]. Our study, working with South Korean artists from diverse artistic disciplines, conducts workshop-based research [8], for the investigation of AR as an artistic tool for novice or non-technical users. This methodology entails hands-on experiences where artists gain practical insights into the potential and challenges of using AR and provides them with the necessary contextual knowledge and guided training to help them move beyond tutorials to truly explore the expressive affordances of the medium.

AR Workshop

Method

Participants were recruited through the social media platforms Facebook and Instagram. Twelve artists attended the workshop sessions, each bringing their unique perspective and creative background to the project. The composition of the group included two individuals with backgrounds in theatre, one in photography, one from design, two from visual art, one from literature, two from multimedia art, and three from different musical fields, including violin, composition, and vocal. None of them had any experience using AR software before participating in the workshop.

The workshop series spanned four weeks and adopted a hybrid format of in-person and online meetings, combining synchronous and asynchronous elements. For the AR application, participants were introduced to Lens Studio, a user-friendly platform developed by Snap Inc. for crafting AR experiences within Snapchat, which is suitable for non-technical users and accessible on mobile devices such as mobile phones and tablets [9]. Four synchronous workshops, conducted online, each lasting one to two hours, served as interactive sessions for participants to engage with AR concepts and applications. Complementing the live sessions, participants were provided with asynchronous learning materials such as detailed tutorials. These tutorials introduced ways to implement different types of AR, including visual and audio effects, and asset curation.

In the final phase of the project, a one-day 6 hours in-person creative workshop was conducted. This workshop provided participants with a physical space to bring their AR artworks to life by connecting them with various paper materials and physical artifacts. Participants engaged in a collaborative and creative process, resulting in the creation of twelve distinct AR artwork prototypes. These artworks showcased the artists' interpretations of AR's potential as an artistic medium and its impact on their creative expression.

AR artwork prototypes

The workshop series yielded twelve distinctive AR artwork prototypes. We refer to the participants as P1–P12 herein.

"Dust" is an invitation letter to a theatre play directed by P1. This AR artwork delves into the transient nature of life and death, using AR components to reveal the ephemeral and vanishing aspects of existence, akin to dust.

"Tell Me Who I Am" is an AR 3D diorama-style play prototype by P2. When viewers scan character miniatures via a mobile device, clues about the character's identity appear

through AR. This artwork challenges stereotypes related to cultural imagery through AR.

"Frame C" is an AR photograph exhibition that utilizes three frames to enhance the viewer's appreciation of P3's photographs. Two AR mobile devices, "Frame A" and "Frame B," present the images differently, with "Frame C" serving as a transparent frame that encourages viewers to contemplate their own perceptions of the photos.

"&Circle" serves as an invitation letter to P4's music show. When viewers scan the letter, a surreal performance video by P4 materializes, allowing them to envision the forthcoming show. Additionally, scanning wave images triggers the sounds and animations, providing viewers with insights into the experimental aspects of P4's music performance.
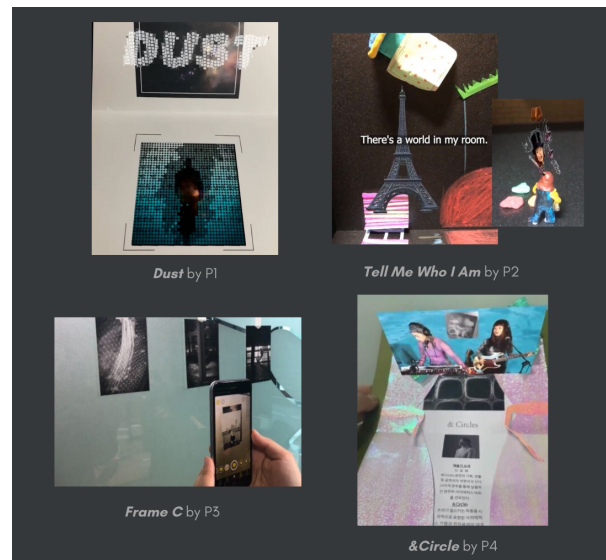

Figure 1. Still images from AR artwork prototypes. Clockwise from top-left: *Dust*, *Tell Me Who I Am*, *&Circle*, and *Frame C*.

"The Time of Endangered Animals" is an AR-illustrated calendar created by P5. While the calendar itself is printable, P5 designed AR animal illustrations. Scanning a particular month with a mobile device unveils images and sounds of endangered animals. P5 transforms the act of checking a calendar into an exciting and educational experience.

"Remember the Music" is an AR album that encapsulates P6's music performance memories. P6 crafted a card to encapsulate her career-related memories. When viewers scan the card, an AR-enhanced performance video plays. This unique approach enables P6 to hold and share her cherished memories through the AR album.

"Invitation Letter" materializes as a 3D AR aquarium. P7 employs this medium to present fish integrated into diverse urban spaces, reflecting the ecosystems of contemporary

cities. Through AR, viewers can carry and access a pocket-sized AR aquarium constructed from paper.

"Learning Strings" is an AR strings piece by P8, showcasing various sounds produced by several strings. When viewers scan her drawing of a particular instrument, that instrument's sound resonates. P8 envisions utilizing AR strings to facilitate music education.
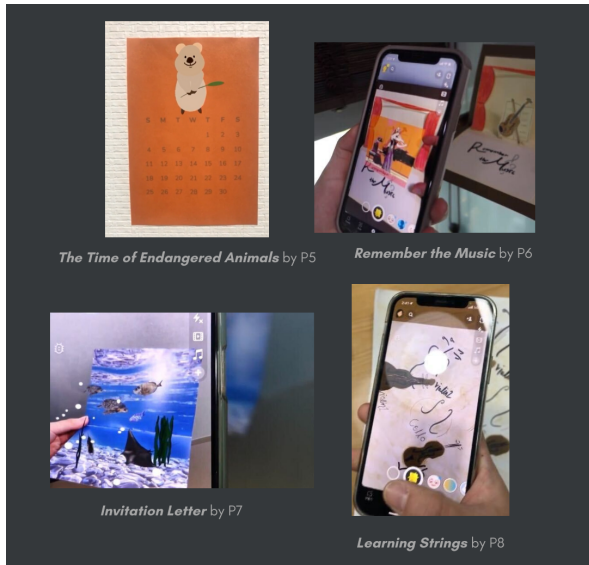

Figure 2. Still images from a collection of AR artwork prototypes. Clockwise from top-left: *The Time of Endangered Animals, Remember the Music, Learning Strings* and *Invitation Letter*.

"Greetings from Everywhere" serves as an AR travel diary. P9 enhances a printed map with various photos using AR. The photos capture P9's travel memories, and scanning specific map locations unveils images and memories, preserving and sharing travel experiences in the digital era.

"Music for Eyes" is an audiovisual artwork by P10, combining drawings and paintings with music. Scanning P10's visual artwork triggers the playback of his accompanying music compositions. P10 aims to enable viewers to feel the music while appreciating his visual creations.

"Maru" is a visual poem created by P11, portraying her mother's home in her hometown. She composed a poem reflecting on her childhood and hometown, and this textual element was incorporated into the painting. "Maru" encapsulates themes of inheritance, generational memories, and the ephemeral nature of human existence.

"Imaginary Burden and Breathing" by P12 are AR visual art cards. The viewer can imagine the ideas and feelings of burden and breathing when they see the cards. When they detect the cards, P12's 2D animated illustrations are seamlessly combined with the images. She used AR to elicit the viewer to fill in the gaps when they scan the images.
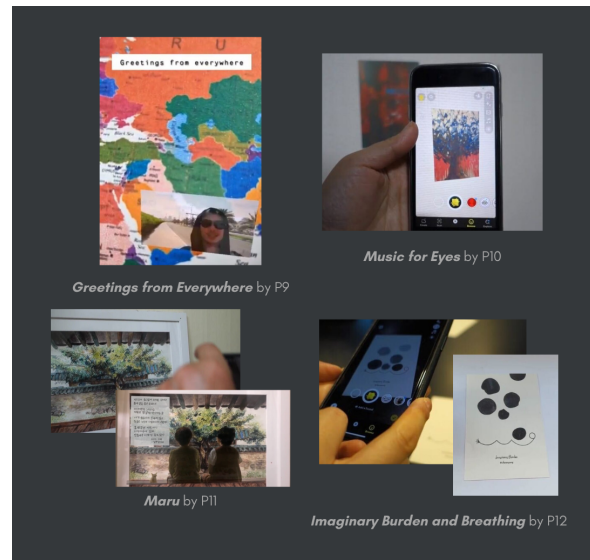

Figure 3. Still images from a collection of AR artwork prototypes. Clockwise from top-left: *Greetings from Everywhere, Music for Eyes, Imaginary Burden and Breathing* and *Maru*.

Findings and Discussion

The findings from our workshop-based research provide insights into the versatile applications of AR in the realm of art, shedding new light on its potential as a medium for creative expression and audience engagement. Representing diverse artistic disciplines, participants P1 to P12 have shared perspectives that underscore the power of AR within the context of creative art.

P6, P9, and P11 recognized AR as a powerful tool for preserving the essence of live performances, personal travels, and enhancing memories in immersive ways. This aligns with the notion that AR can serve as a medium for preserving significant events in a more vivid and lasting manner and helping anyone memorize more effectively [10]. P1, P4, and P10's perspectives on AR as a promotional tool for artists illustrate its ability to augment traditional marketing materials. AR can provide new marketing channels and offer interactive promotional experiences for artists and their audiences [11].

P7, P11 and 12's insights have highlighted AR's remarkable capacity to engage viewers with visual art, challenging traditional paradigms of visual appreciation. This resonates with the concept of AR as a tool for transforming hidden visual elements into dynamic, interactive experiences, encouraging viewers to explore art in their own ways [12]. P8's perspective on AR in education, particularly in the realm of music instruction, reveals its potential to democratize

learning by facilitating interactions and collaborative performances. AR can empower educators by providing engaging methods for teaching artistic practice [13].

P3 envisions AR as a catalyst for contemporary photography, turning static images into imaginary storytelling, emphasizing active engagement. P2's exploration of AR as an interactive storytelling device within theater breathes new life into live performances, demonstrating its potential to create participatory narrative, where the audience becomes a co-creator in the narrative, blurring the boundaries between reality and fiction [14]. P5's minimalist approach to integrating AR into a calendar illustrates its power to add layers of meaning to everyday objects. AR is used to create meaningful augmentations in the physical world, inviting viewers to reinterpret their surroundings [15].

These findings underscore several key themes. AR emerges as a valuable tool for preserving live moments, enhancing memories of significant events, and fostering interactive educational experiences. It provides a dynamic means of engaging viewers with various forms of art, revitalizing audiovisual pieces, and promoting interpretation and curiosity. AR achieves this by blending the tangible with the imaginative, revealing hidden concepts, and enriching participatory storytelling [16]. The research also demonstrates AR's promotional potential for artists and its ability to bridge diverse artistic disciplines. Overall, the study highlights AR's transformative potential across a wide spectrum of artistic disciplines.

Conclusion

The research delves into the dynamic fusion of AR and artistic expression by engaging in workshops with a diverse group of South Korean artists. We explored the multifaceted potential of AR as a creative medium. AR emerges as a means to capture and immortalize live performances, enrich personal memories, and facilitate interactive music education. AR also reveals its prowess as a potent promotional instrument and allows artists to augment their audiovisual materials and blending the tangible with the digital realm. Our research illuminates the transformative potential of AR in the various arts while democratizing artistic expression using AR within South Korean art community.

Acknowledgements

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