UNIVERSITI TEKNOLOGI MARA

CREATA 2026

INTERNATIONAL CONFERENCE on CREATIVE PRACTICES in FILM, THEATRE and ANIMATION

Theme

Innovation, Culture, and Collaboration in the CREATIVE ARTS

PROCEEDINGS

3rd & 4th FEBRUARY 2026

HYBRID | Online & Physical

UNIVERSITI TEKNOLOGI MARA | Fakulti Filem, Teater dan Animasi

UNIVERSITI TEKNOLOGI MARA | Institut Seni Kreatif Nusantara

Integrating Augmented Reality into Figurative Sculpture for Enhanced Artistic Expression

[1] * Goh Kiang Kuan , [2] Tetriana Ahmed Fauzi , [3] Hasnul Jamal Saidon , [4] Aloysius Anselm Yapp

[1] Fine Arts Department, School of The Arts, Universiti Sains Malaysia, Penang, Malaysia & gohkk@student.usm.my

[2] Fine Arts Department, School of The Arts, Universiti Sains Malaysia, Penang, Malaysia & tetriana@usm.my

[3] Fine Arts Department, School of The Arts, Universiti Sains Malaysia, Penang, Malaysia & hasnuljsaidon@usm.my

[4] Department of Game Studies, Faculty of Creative Industries, Universiti Tunku Abdul Rahman, Selangor, Malaysia & aloysius@utar.edu.my

Corresponding Author

ABSTRACT

The incorporation of augmented reality (AR) into contemporary art practices has opened up new avenues for enhancing the expressive capabilities of physical artworks. Artists are increasingly utilizing AR to integrate narrative, interactive, or animated elements into their creations, yet scholarly research on how AR design features affect the viewer's experience of sculpture is still sparse (Sovhyra, 2020). This research introduces a conceptual framework for merging AR with figurative sculpture to amplify artistic expression and viewer interpretation. Development and testing of this framework was done using a practice-based prototype artwork that incorporates clay sculpting, 3D scanning techniques, digital animation techniques, spatial audio composing and augmented reality overlay techniques. The prototype or concept was able to transform the figurative sculpture into an immersive and interactive object that could unveil hidden messages or meanings beyond gestures and encode supplementary or contextual information into the object without necessarily modifying or affecting its physicality or form. Preliminary testing will support the iterative creative process by informing artistic decisions made by the artist during the development of the prototype. The anticipated outcome is a refined conceptual framework illustrating how AR can function as an expressive extension of sculptural practice, offering artists, curators, and researchers a structured approach for creating impactful AR enhanced figurative sculpture works.

Keywords: *Augmented Reality; Figurative Sculpture; Experiential Values; Virtual Presence; Practice-based Research.*

INTRODUCTION

Artists increasingly find ways to incorporate augmented reality (AR) into their processes to enhance the aesthetic and storytelling aspects of physical art pieces. AR makes it easy for artists to overlay virtual components like animations and visualizations onto physical sculptures so that it can enhance the experience of perception for the viewer (Metrick-Chen, 2015). According to a 2019 article by Seo, Park, and Park, augmented reality (AR) technology enhances real-world environments through

interaction with virtual elements. This perspective aligns with using immersive technologies to modify or enhance real-world environments using virtual elements. Despite the creative potential of AR, there is a lack of academic research on how AR design elements specifically affect viewer experiences in the context of sculpture (Sovhyra, 2020). Most current studies concentrate on technical development, museum applications, or user-interface design, leaving a gap in understanding the aesthetic, emotional, and interpretive impacts of AR-enhanced sculptural artworks **(**He, Wu & Li, 2018). This study aims to investigate how augmented reality can extend figurative sculptural expression by using the production process itself as the primary mode of inquiry. Through iterative making, testing, and refinement of an AR-enhanced sculpture prototype, the study emphasises creative experimentation and reflective decision-making of the artist, guided throughout by the project's conceptual framework. The study proposes a model with four Virtual Presence Variables (VPVs) and three Experiential Value Variables (EVVs).

Virtual Presence Variables (VPVs) - AR Design Elements:
VPV1: Spatial Alignment and Layering
The level at which virtual content is accurately matched with the actual dimensions of the figurative sculpture so as to preserve cohesiveness and realism.
VPV2: Animation and Motion Cues
The use of animated sequences to extend gesture, show internal emotion, or provide a timed narrative.
VPV3: Interactivity and User Engagement Interactive
Features like touch points or trigger responses that encourage viewers to explore the artwork actively.
VPV4: Narrative and Contextual Overlay
Virtual content adding cultural, emotional or symbolic significance that does not affect physical art.

Experiential Value Variables (EVVs) - Reflective decision-making of artist:
EVV1: Depth of Interpret
Examines how augmented reality (AR) may affect viewers' understanding of narrative structure, symbolic interpretation, and artist's intention.
EVV2: Emotional Engagement
Explores how AR-based sculpture may trigger emotions or empathetic reactions among viewers.
EVV3: Immersive Interaction
It assesses how much sensory and spatial immersion viewers may feel.

METHODOLOGY

This study adopts a practice-based research methodology, focusing on the creative process of developing an AR-enhanced figurative sculpture prototype informed by the project's conceptual framework. The methodological emphasis is placed on the production workflow, which integrates both traditional sculptural techniques and virtual media processes.
Prototypes development consists of the following procedural steps:

1. Traditional Clay Sculpting
The figurative form is first achieved through traditional clay sculpting methods. These must establish the physical form, as well as the expressiveness, of the sculptures.

2. 3D Scanning and Digital Modelling
The clay model is digitized through the use of 3D scanning technology. Once digitized, the digital model is further enhanced in 3D computer software for purposes of preparing the model for animation and augmented reality.

3. Gesture Animation

Important expressive movements highlight the sculptural figure, extending its representative capabilities, exploring ways in which movements might enrich, enhance, or augment the conceptual goals of the artwork.

4. Integration of Audio Spatial

Spatialized sound elements will be added in order to increase immersion within the developed prototypes. These sound elements will correspond with the theme that is incorporated through the conceptual framework.

5. Augmented Reality (AR) Overlay Development

AR Overlays are designed and developed for viewing via mobile devices, allowing the physical sculpture installation to be enhanced with digital overlays that respond to the purposes of the study's research.

The practice-based methodology positions the production process itself as the primary mode of inquiry, allowing the iterative making, testing, and refining of the prototype to illuminate how AR can extend figurative sculptural expression. Rather than emphasising formal measurement, the methodology prioritises creative experimentation, reflective decision-making of artist, and the alignment of each production stage with the conceptual framework guiding the research.

LIMITATION AND DISCUSSION

This practice-based inquiry focuses on the creative experimentation of augmented reality (AR) enhanced sculptural artwork, and as such, there is neither any measurement nor validation of viewer perceptions. Although some preliminary observations inform the development of the prototypes, there remains an exploratory nature with respect to the communicative efficacy of the AR elements. Findings are unique to this prototype, which may not generalize well with other sculptural types or AR tools. Indeed, this verifies the importance of the next phase of this research, which would encompass viewer studies that assess this proposed conceptual framework.

CONCLUSION

This study proposes a conceptual model demonstrating how augmented reality can extend the expressive capabilities of figurative sculpture. By integrating digital animation, contextual overlays, and interactive elements, AR transforms static sculpture into a dynamic mixed-reality experience that deepens interpretation and emotional engagement. Through a practice-based methodology, the research contributes new insights to the limited academic discourse on AR within fine art practice and provides practical guidelines for future artistic and scholarly exploration. Future research could integrate multi-user AR experiences, or haptic feedback to further advance the model.

ACKNOWLEDGEMENTS

The author extends appreciation to the institutions, mentors, and collaborators who supported the development of the prototype and research framework.

REFERENCES

Abdel Salam, S. H. (2018, June 1). Augmented Reality (AR) Aesthetics as a method for creative artistic expression. *International Journal of Artificial Intelligence and Emerging Technology*, *1*(1), 4–7. https://doi.org/10.21608/ijaiet.2018.181415

Abramson, H. (2018, June). The Digital Sculpture Toolbox: Eight Technologies with Significant Impact on the Future of Sculpture. *Sculpture Review*, *67*(2), 34–39. https://doi.org/10.1177/074752841806700206

Adrien. M, Claire. B. (2020) *Acqua Alta- Crossing the Mirror: A pop-up and augmented reality book.* Lyon- France.

Al-Bahadli, A. J. (2021, November 1). The Aesthetic Variable in Contemporary Sculptural Formation. *Journal of Art, Design and Music*, *1*(1), 38–51. https://doi.org/10.55554/2785-9649.1001

Billinghurst, M., Clark, A., & Lee, G. (2015). "A Survey of Augmented Reality." Foundations and Trends in Human–Computer Interaction, 8(2-3), 73-272.

Brandl, M. S. (2023). *A Philosophy of Visual Metaphor in Contemporary Art*. Bloomsbury Publishing.

Chamberlain, R., & Wagemans, J. (2015). Visual arts training is linked to flexible attention to local and global levels of visual stimuli. *Acta Psychologica*, 161, 151-159.

Chittenden, T. (2019, November 29). Sculpture in a Spin: Surfaces in Deformation in Mat Collishaw's The Centrifugal Soul. *Art And Perception*, *7*(2–3), 211–237. https://doi.org/10.1163/22134913-20191111

D'Angiulli, A. (2021). *Vividness, Consciousness, and Mental Imagery*. MDPI.

Genay, A., Lécuyer, A., & Hachet, M. (2021). Virtual, Real or Mixed: How Surrounding Objects Influence the Sense of Embodiment in Optical See-Through Experiences? *Frontiers in Virtual Reality*, *2*.

Guazzaroni, G., & Pillai, A. S. (2019). *Virtual and Augmented Reality in Education, Art, and Museums*. IGI Global.

He. Z, Wu. L, Li X. R. (2018). *When art meets tech: The role of augmented reality in enhancing museum experiences and purchase intentions.* Philadelphia: Journal of Tourism Management.

Holmberg, S. M. (2018, June). Technology in Service of Art: Sculptors Make use of Digital Technology and Processes in Creating Their Work. *Sculpture Review*, *67*(2), 28–33.

Hu, T. (2025). Form and symbolism: a cross-cultural analysis of ancient Chinese and West African traditional figurative sculptures. *Cogent Social Sciences***.**

Jenny. K and Eva. N. M. (2019). *Immersive experiences in museums, galleries and heritage sites: a review of research findings and issues.* [Project Report]. Creative Industries' Policy and Evidence Centre (PEC).

Kaya, A. (2023, April 4). Digital Sculpture as a Contemporary Art Form: New Possibilities Provided by Digital Sculpture. *Journal of Art and Iconography*, *4*(1), 3–10.

Lijn, L. (1998). Body and Soul: Interactions between the Material and the Immaterial in Sculpture. *Leonardo*, *31*(1), 5.

Melai. A. (2019). *The Immersivity of Art in the Digital Age. Augmented Reality as a New Form of Art Exhibiting.* Dieburg: University of Applied Sciences Darmstadt.

Metrick-Chen, L. (2015). Augmented Reality Art: From an Emerging Technology to a Novel Creative Medium. *Public Art Dialogue*, *5*(1), 104–105.

Park, S., & Stangl, B. (2020). Augmented reality experiences and sensation seeking. *Tourism Management*, *77*, 104023.

Perfors, A. (2024). The Work of Creation in the Age of AI. (Discussed in *Art Is Soul*, Case Greenfield website, March 10, 2024).

Perkins, H. (2010, January 1). *Art Plus Soul*. The Miegunyah Press.

Plotinus. (2021). Plotinus on the Arts (Chapter 10). In *Productive Knowledge in Ancient Philosophy*. Cambridge University Press.

Read, H. (2023, October 17). *The Art of Sculpture*. Princeton University Press.

Riefe, C. (2017). *Meaning in Perception: Metaphor in Figurative Sculpture*. [Master's Thesis/Electronic Theses and Dissertations]. Washington University in St. Louis.

Seo, B. K., Park, J., & Park, J. I. (2019). A New Perspective on Enriching Augmented Reality Experiences: Interacting with the Real World. *PRESENCE: Virtual and Augmented Reality*, *28*, 53–63.

Sojung, Y., & Jai-Yeol, S. (2023). Attention and creativity. In R. E. Jung & O. Vartanian (Eds.), *The Cambridge handbook of the neuroscience of creativity* (pp. 161-179). Cambridge University Press.

Sojung.Y, Jai-Yeol. S (2021). *The roles of digital exhibition in enhancing immersive experience and purchase intention.* Hawaii*:* Journal of Human-Computer Interaction in the Digital Economy.

Sorrentino. A, Ferretti. M , Risitano. M, Elgammal. I. (2020). *Does digital technology improve the visitor experience? A comparative study in the museum context.* Italy : International Journal of Tourism Policy.

Sovhyra.T (2020). *Implementation of augmented reality technologies in artwork creating process.* Journal of History Culture and Art Research, *9*(4), 111-121.

Ward, B. (2019). The Resurgence of the Figure and Its Importance in 21st Century Sculpture. *Sculpture Review*, 68(1), 32-37.

Zabelina, D. L. (2018). Creativity and attention control. In *The Oxford handbook of the neuroscience of creativity*. Oxford University Press.

Zhang, Y. (2023). Colouring the Sculpture through Corresponding Area from 2D to 3D with Augmented Reality. *Advances in Computer and Communication*, *4*(1), 25–36.