THE CLASH.

EXPLORING MEMORY THROUGH THE MATERIALITY OF DIGITAL AND TRADITIONAL ART

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THE CLASH.
EXPLORATION OF THE CLASH OF MATERIALITY BETWEEN
DIGITAL AND TRADITIONAL ART

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Abstract

My MFA thesis project, *The Clash,* explores memory processes and the conflicts of materiality between traditional and digital media through an immersive, interactive installation using projection mapping and visual effects. My traditional media paintings with their specific tactile materiality are digitally expanded and re-explored with visual programming and animation techniques and occasionally using generative AI. The project creates a spatial experience inviting viewers to physically engage with my memories in a dynamic process of change. The imagery in the installation is drawn from my personal experiences, including places, objects, and cultural symbols, which are interpreted and recontextualized through digital means. These visuals reflect how memories of my past experiences are continuously reshaping and merging with new ones while becoming altered due to my changing environment. By allowing the audience to activate and navigate the installation space, the project encourages both personal reflection and broader contemplation of how memories are visualized and communicated in art while altered by the material properties characterizing the medium of artistic expression. Ultimately, *The Clash* contributes to ongoing conversations about cultural continuity and the transformation of memories in the digital age.

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Chapter 1. Introduction

Memory is not only a process of recollecting past experiences, but it is also an ongoing process of reconstructing them by recombining and reimagining them in relation to new lived experiences and contexts.

The Clash is an immersive video projection mapping experience that reconstructs the memory space of my life's journey through visual programming, projection mapping, animation, video, illustration, and acrylic painting. The project explores the nature of memories, projecting the interaction between short-term memory and long-term memory. This project also explores the concept of meditation theory examining digital media and traditional media affordances in tactility, temporality, and flow. It investigates how physical, fixed media coexist and interact with digital media to collaboratively present the concept of memory across different stages of my life. The process reflects the formation of the ongoing reconstructive memory. By incorporating Taiwanese motifs and patterns, it allows me to repurpose and reshape symbols and patterns into a new context, where it generates a new meaning in general, but still holding meanings separately. Lastly, the thesis project considers how artists engage with memory, selecting what to preserve, emphasize, or allow fade, and how the process shapes the understanding of collective consciousness in contemporary society.

To explore how digital media can reconstruct and reinterpret memory presented through both digital and traditional media. My project investigates the materiality and interaction between these two forms in reshaping and recreating personal memory. The fundamental influence of my project started with the work of the *TV Buddha,* by Nam June Paik. In his work, Paik materializes the tension between technological surveillance by using

closed-circuit camera and a buddha sculpture to blend ancient symbolism with technology immediacy[1]. His approach allows me to reflect on the capability of alternation that media can combine with traditional media to transform our experience to time and memory. Building on my interest of idea of materiality and memory, I was further influenced by Turkish American media artist Refik Anadol, whose project *Quantum Memories*[2] explores interactive spaces that structure collective consciousness and memory representation through data visualization and AI-generated art. To explore how digital media and interactive projection mapping can remediate the fluidity of memory, I experimented starting from my acrylic painting. By using projection mapping as a means of engaging with the paintings, I aim to investigate how cultural narratives and personal memories can be reinterpreted and recontextualized through digital media.

In this sense, I see this as an intriguing way to preserve our memories by leveraging immersive spaces to present both the tangible and intangible aspects of my history as an individual. This approach allows me to re-engage my memory by repurposing symbols and cultural patterns through remediation, offering a holistic perspective on memory reconstruction and reinterpretation. This aligns with Bolter and Grusin's (1999) theory of remediation, which suggests that new media reshape and repurpose older media forms.[3] Although interactive projection mapping has been previously explored in relation to memory, my research expands on this by examining how it can function as a bridge between physical and digital media. This approach provides new ways to engage with and reinterpret cultural

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[1] TV Buddha," Nam June Paik Art Center, accessed March 2, 2025, https://njpart.ggcf.kr/collections/205.
[2] Refik Anadol, *Quantum Memories*, accessed March 2, 2025, https://refikanadol.com/works/quantummemories/.
[3] J. David Bolter and Richard Grusin, Remediation: Understanding New Media (Cambridge, MA: MIT Press, 1999),11.

narratives. Through this project, I contribute to the exploration of new possibilities and offer potential directions for future research in this field.

Chapter 2. Background

Memory is not a fixed archive but an ongoing process of constant forgetting and reimagining. The cyclical nature of slowly reshaping the perception of the past is granting old experiences new meaning.

Growing up in Taiwan, I often wondered how artistic styles, especially traditional motifs and visual patterns, could shift over time under the influence of changing cultural, environmental, and personal contexts. In my undergraduate studies my connection to memory has always been rooted in moments of visual experience, whether through tactile brushwork or fleeting interactions captured with digital devices.

As I moved to Canada for my graduate studies, the reflection deepened through the lens of New Media. The cultural transformation was confusing and disorienting. Despite Canada's celebrated cultural diversity, I often found myself feeling isolated and culturally disconnected experiencing a sense of cultural alienation. The experience led me to question how transformation of memories impacts identity and interpretation, and the contradictions between my roots and the unfamiliar space I now occupied. This mixture became a lens through which I re-evaluated how memory operates, not only within myself but within visual culture at large.

In my thesis project, I aim to explore how both the ephemeral and permanent aspects of memory can be translated into visual and spatial experiences. Specifically, I experiment with the interaction between traditional Taiwanese visual motifs and contemporary digital technologies such as projection mapping and real-time visual rendering. Through this, I question: Can the tactile and symbolic richness of traditional media be preserved and remain

valid when reinterpreted in a digital context? Does digitizing memory enhance or reduce its emotional depth?

The Thesis project "The Clash" adopts a practice-based research methodology, where creative production serves as both the method and the outcome of inquiry. Through repetitive experimentation and iterative reflection, I investigate how traditional cultural motifs can be transformed into digital, interactive experiences using tools such as visual programming, projection mapping, and animation. The installation will also integrate audience interaction to examine the phenomenological aspects of memory activation in immersive environments.

My research is inspired by theories of social memory and the variable media framework proposed by Rinehart and Ippolito[4], who argue for preserving the critical experience and behavior of new media art rather than its material form. This approach resonates with my desire not simply to document memories but to recreate evolving, immersive experiences that reflect the instability and richness of remembrance.

I also question the emotional authenticity of memories captured purely through digital means in the rapidly shifting technological world. While digital devices allow for effortless recording, they can distance us from the very moments they claim to preserve. In contrast, traditional media, through physical touch and slower engagement, encourages deeper reflection. This dichotomy leads me to explore: Does the act of remembering change depending on the medium through which we engage with it? What is lost or gained when we translate memory from physical to digital form?

It is argued that the concept of representation is a complex process involving not only the reflection of the world but also its construction and negotiation through cultural symbols and practices. Representation plays an important role in mediating our understanding of

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[4] Richard Rinehart and Jon Ippolito, Re-Collection: Art, New Media, and Social Memory (Cambridge, MA: MIT Press, 2014).

culture and the world around us.[5] Therefore, we can suggest that digital representation not only communicates ideas and experiences but contributes to the creation of meaning integrating with cultural value and personal memory as an artist. Also, the collective convergence of cultural images that are reshaped by different forms of art builds a country's identity, which forms a foundation for national visual culture. Therefore, I consider that cultural symbols are essential tools for artists seeking to engage within an environment embedded with cultural significance and preserve what is important for the artist as an individual. These symbols assist the transformation and translation of meaning to a culture, allowing artists to foster new perspectives and contributing to the reinvention of personal identity, where it is constantly processed and reintegrated internal reflection and external recognition.

The work *TV Buddha* by Korean new media artist Nam June Paik draws on spiritual aesthetics rooted in oriental culture. It particularly reflects on the intersection between Buddhist symbolism, the concept of "Zen", and contemporary technology. The installation features a Buddha statue gazing at its own image on a television screen, captured in a real-time loop through a camera and displayed in a continuous loop.[6] The setup creates a powerful juxtaposition symbolizing the spiritual aesthetics between stillness and movement. Particularly, physical stillness of the Buddha embodying introspection, serenity, and timeless presence, sets off the constant motion of its digital reflection. It represents transience, and the flow of time.[7]

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[5] Stuart Hall, ed., Representation: Cultural Representations and Signifying Practices (London: Sage Publications, 1997)
[6] Video Art Pioneer: Nam June Paik in 5 Artwork DailyArt Magazine, January 2025, https://www.dailyartmagazine.com/nam-june-paik-in-5-artworks/.
[7] Tae-seung Lim, "The Aesthetic of Movement and Stillness in Nam June Paik's TV Buddha," Journal of Aesthetic and Art Criticism in East Asia 12, no. 2 (2016): 45–58.

This conceptual tension between stillness and movement inspired me to have my own exploration of oriental aesthetics between digital media and traditional media. Throughout this exploration, I began incorporating cultural symbols and motifs into my projection-based installations, using the layering of video over static acrylic paintings to express the coexistence of the temporal and the eternal. In my work, digital interactivity is implemented, such as motion-activated particle effects, to further examine this duality, allowing the viewer's presence to create turbulence within still imagery. Digital media, in this context, becomes not only a tool for representation but a space for meditative engagement and cultural reflection, which is one of the ideas that inspired me in creating a space that reflects memories and my culture through the discussion on materiality.

In *"The Language of New Media"* Lev Manovich states that "the oscillation of illusion and interactivity in what digital media bring is not an artifact of technology, but structural feature of the modern society." Building on this idea, I view the digital representation of cultural elements in art as a continuously developing process, that influences how masses interpret culture. In other words, it indicates the feedback loop of how culture continues to shape society in general.

In summary, the oriental aesthetics embedded in Paik's TV Buddha influenced my artistic approach. His work motivated me to combine both traditional media and digital technologies to communicate cultural meaning in a way that bridges the gap between permanence and transience. By using interactive media and projection mapping, I aim to emphasize the contrast between stillness and movement, inviting audiences to reflect on their cultural identity within a digitally mediated environment. This approach allows me to engage viewers in an experience that is both contemplative and dynamic, where tradition and modernity coexist through immersive artistic expression.

Chapter 3. Visual Culture and Culture Heritage

Digital reproduction and its potential for alteration and change encapsulates the spirit of evolving culture, and it contributes a vital way to a country's cultural development, that could exist in our memory and history. However, media technology advancement in developing forms of representation can influence how spectators interpret and learn from the visual representation of history. Digital media remediate the gap between for people who are not directly exposed to certain cultural tradition to acquired information in regards to certain traditional culture in a more accessible by using virtual media and interaction component.[8] In other words, digital media technology, This suggests that carefully designed digital representations, through visuals, layout, and interactivity, not only safeguard heritage but also make it more accessible and engaging to contemporary audiences, which contributing to a role in how cultural tradition and history is conveyed and reinterpreted. A thoughtful visual design can enhance the understanding of cultural heritage and maintain its legitimacy conveyed through different media. The use of computer graphics allows the artist to 'remediate' reality and reshape identity through visual and sonic art language.[9] By deconstructing and reassembling materials through digital modules and syntax, artists create compelling audiovisual works, based on the concept of "artworks structure of new media" as described by Lev Manovich; modular, variable, and reliant on database logic rather than linear narrative[10]. These artworks not only preserve culture and history but do so in a manner that is engaging and meaningful.

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[8] Saptarshi Kolay. "Cultural Heritage Preservation of Traditional Indian Art through Virtual New-Media." *Procedia- Social and Behavioural Science* 225 (2016): 309-20. https://doi.org/10.1016/j.sbspro.2016.06.030.
[9] Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999),230.
[10] Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2001),30.

Moreover, visual culture is deeply intertwined with the evolution of media. The content creation process and its dissemination through media shapes contemporary historical narratives. In my thesis, the exploration of culture patterns and objects as visual motifs reveals the profound influence of Taiwanese culture on my identity and perception reconstruction. Digital renditions of cultural heritage serve as a bridge between society and its history, effectively closing the gap created by distance and time in ways that inherently differ from earlier forms such as text, still images, or performance. Unlike traditional media, digital media affords interactivity, real-time feedback, and non-linear access, allowing audiences to explore cultural narratives through immersive, participatory experiences. This aligns with what Rinehart and Ippolito describe as digital preservation's role in extending access and memory beyond traditional boundaries[11] In my thesis, I rediscover myself via cultural patterns and objects as visual motifs rooted in Taiwanese culture. It reveals how these motifs influence my perception of identity. To me, Digital renditions of cultural heritage play a role as a bridge between personal and collective history by repurposing symbolic and cultural patterns and motifs in my work, reducing the distance imposed by time, geography, or generational loss. This directly parallels Rinehart and Ippolito's view of digital preservation to extend access and memory beyond traditional boundaries.

[11] Richard Rinehart and Jon Ippolito, *Re-collection: Art, New Media*, and Social Memory (Cambridge, MA: MIT Press, 2014).

Chapter 4. Expanding Space

Kelly Richardson's The Erudition (2010) proposes an example of how digital media can construct hyperreal environments that blur the boundaries between the virtual and the real. While the piece serves as a cautionary tale about the possible replacement of natural environments with computer-generated ones, it also illustrates the potential of digital landscapes to evoke emotional and reflective experiences.[12] I found that, Computer graphics, in this sense, are not merely visual tools but narrative agents that can simulate the emotional texture of past experiences, where I found it beneficial to create an immersive experience for memory exploration and reconstruction for my work to. Also, I believe that computer graphics play a crucial role in expanding the virtual part to create a new reality for artists to revisit and appreciate the sublimation of culture and reconstructing memories with new experiences. In the context of using computer graphics for cultural representation, interactivity is often a highlighted affordance. It focuses on the capacity to enrich art experiences with dynamic, emotional, and multi-sensory elements that go beyond mere static visual appeal. This suggests that the aesthetic experience in interaction design should be comprehensive, involving not only visual elements but also constantly engaging all senses. These senses and emotional connections can be transformative, which can be reintegrate into a new moment with a new engagement in choosing ways to interact with the work.

In the Interaction Aesthetics Framework proposed by Liu Yuelin, it is highlighted that the composition of interactive aesthetics involves multi-sensory elements, including time, space, physics, and the virtual[13]. This significant divergence from the traditional static

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[12] Kelly Richardson, The Erudition, 2010, video installation, accessed May 21, 2025, https://kellyrichardson.net/portfolio/the-erudition/.

[13] Xiaobo, Lu, and Liu Yuelin. "Embodiment, Interaction and Experience: Aesthetic Trends in Interactive Media Arts." *Leonardo* 47, no. 2 (2014): 166–69. http://www.jstor.org/stable/43834153.

medium highlights the complexity of interactive aesthetics. The debate among artists and scholars about the essence of interactive aesthetics is ongoing, reflecting the diversity of viewpoints in the field. Computer graphics can be considered as an important medium not merely for their technical capabilities, but for their conceptual strength in simulating the intangible parts of memory, culture, and identity. The digital space becomes a stage for storytelling, remembrance, and introspection. It is within this virtual yet sensorially rich environment that memory can be revisited, culture and identity can be reimagined.

Chapter 5. Interactivity and Visual Effects with Visual Programming

In the context of fine arts, visual programming is a tool that enables the construction of interactive environments through the manipulation of graphical building blocks. Visual programming served as a medium to bridge the gap between the viewer and the artwork, triggering the process of understanding the work through interaction[14]. According to Wanjiku Mbugua, effective interactive installations rely on clear interaction design to foster emotional and intuitive responses from the audience[15]. Interactive media afford not only immersion but also allow the audience to influence and reconstruct the artwork's meaning through their participation. In this way, audience play as an active agent in the interpreting artwork through their own experience to the work, then define the meaning later.

Nowadays, with the rapid development of AI and technology, there are increasingly more external resources that allow artists to integrate visual programming software—such as TouchDesigner—to create new real-time visual-audio effects. Visual programming can be traced back to Ivan Sutherland's Sketchpad (1963), which introduced the concept of a graphical user interface (GUI).[16] To further, visual programming can be interpreted as a graphical mediation between the artist and the computer, where complex codes and syntax are translated into visual nodes and connections. Through this process, platforms such as TouchDesigner make it easier for artists to communicate ideas, experiment with data, and design interactivity without requiring fluency in traditional programming languages.

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[14] Ernest Edmonds, Linda Candy, Mark Fell, Roger Knott, Sandra Pauletto, and Alastair Weakley, *Developing Interactive Art Using Visual Programming* (UK: Creativity and Cognition Research Studios, 2003).
[15] Wanjiku Mbugua, *Interactive Installations: Engaging Audiences through Participatory Art* (ResearchGate, 2024), https://www.researchgate.net/publication/382878501_Interactive_Installations_Engaging_Audiences_through_Participatory_ART.
[16] Ivan E. Sutherland, *Sketchpad: A Man-Machine Graphical Communication System* (Cambridge, MA: Massachusetts Institute of Technology, Lincoln Laboratory, 1963), https://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-574.pdf.

Although Sketchpad was not directly related to digital real-time processing, it laid the conceptual foundation on graphical and object-oriented manipulation to digital art and design computing. On the other hand, the real-time visual effects can be traced back to the invention of Quantel Mirage, a digital video effects processor introduced in 1982.[17] This software was capable of real-time manipulation of live video, including effects such as warping and morphing. The concept behind the Quantel Mirage helped to normalize and advance the idea of real-time video manipulation, paving the way for later tools such as TouchDesigner, a software environment built around procedural logic and real-time interactivity." In short, we can conclude that real-time visual effects have evolved with the emergence of graphical user Interface-based visual programming software enabling the accessibility for artist to create and to create an interactive experience in a more intuitive and understandable way to design an interactive structure compared to syntax-based coding.

However, does interactivity belong only to digital media? Is there another form of interactivity that also exists in traditional or physical media? These questions come down to the unique affordances of different media and the perspectives through which they are understood. For example, the tactile engagement offered by traditional materials and the responsive feedback of digital systems each enable distinct layers of interactivity and meaning.[18]. The media affordances within an exhibition can be intentionally designed by the artist and are not confined to a fixed or singular mode of interaction. In some cases, even though traditional media may lack the real-time responsiveness characteristic of digital systems, they can still evoke spiritual, emotional, or reflective engagement, where can also be considered as a form of interactivity. An example of this layered engagement is Voxel Bridge, a large-scale public art installation by Jessica Angel. The work combines a tangible,

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[17] "Quantel Mirage," *Wikipedia*, last modified May 2024, https://en.wikipedia.org/wiki/Quantel_Mirage.
[18] Donald A. Norman, *The Design of Everyday Things* (New York: Basic Books, 1988).

physical mural with augmented reality technology to create a synergistic interactive experience, demonstrating how different media afford distinct yet complementary forms of participation.[19] Her work exemplifies how a physical mural art experience can be offered, while also being explored through an AR mobile app, which overlays responsive, animated digital content onto the surface (see Figure 1 and 2). The multifaceted engagement in the artwork creates a new dimension of experience. Therefore, the distinct types of interaction in this work demonstrates that the affordances of different media can be both perceptual and system responsive.[20] The idea challenges the binary between analogy and digital. It also demonstrates the combination of media can generate a space that is emotional resonance and meaning making in an immersive environment. In this way, the integration of digital and traditional media can be understood as an approach to discussing the interplay between tangible and intangible forms of interaction with entities or objects.

[19] "Voxel Bridge," *Vancouver Biennale*, accessed June 3, 2025, https://www.vancouverbiennale.com/artworks/voxel-bridge/.
[20] Donald A. Norman, *The Design of Everyday Things* (New York: Basic Books, 1988)

Figure 1. Author: Jessica Angel. Title: Voxel Bridge – Install – App Testing. Medium: interactive mural with augmented reality. 2021. Photo by Nicole W. Accessed June 4, 2025[21]
[22]

[21] Jessica Angel, *Voxel Bridge – Install – App Testing*, July 16, 2021, photo by Nicole W., accessed June 4, 2025, https://images.squarespace-cdn.com/content/v1/628e39b2a740bb306e6e0590/13583acc-c9bc-4c91-bccb-10fd10d26c13/voxel+bridge+-+install+-+app+testing+-+july+16+2021+-+Nicole+W-16.jpeg?format=750w

Figure 2. Author: Jessica Angel. Title: *Voxel Bridge – Install – App Testing*. Medium: interactive mural with augmented reality. 2021. Photo by Nicole W. Accessed June 4, 2025[23]

Although *Voxel Bridge* demonstrates how augmented reality can create layered interactions between digital and physical media, it lacks the emotional depth that I aim to explore in my project, which focuses on memory. Artist Shimon Attie's work *Mulackstrasse 32 (Butcher's Shop)* exemplifies this using projection mapping to reinsert lost images of Jewish life onto the buildings of Berlin's former Jewish quarter (see Figure 3).[24]

[23] Jessica Angel, *Voxel Bridge – AR Interaction Demonstration*, n.d., accessed June 4, 2025, https://images.squarespace-cdn.com/content/v1/628e39b2a740bb306e6e0590/dd8232ea-be40-4ce9-8fc6-8a12f4d69493/IMG_0015.PNG?format=750w.

[24] Shimon Attie, *Mulackstrasse 32: Slide Projection of Former Kosher Butcher Shop (1930)*, 1992, chromogenic print, Cleveland Museum of Art, https://www.clevelandart.org/art/2017.219.

Figure3. Artist: Shimon Attie. Title: Mulackstrasse 32: Slide Projection of Former Kosher Butcher Shop (1930). Medium: Chromogenic print. 199225[26]

The affordance of projection mapping in this case creates a sense of temporal dissonance, serving as a bridge that helps the audience reconnect with history while the image of the present remains visible beneath. The interaction is constructed on the coexistence of past and present, evoking a sense of loss and remembrance as ghostly images of former residents and businesses momentarily reclaim their space in the urban landscape. This interplay between the tangible and the intangible fosters a form of interactivity that is both reflective and immersive, engaging audiences beyond mere observation.

[25] Ibid.

[26] Shimon Attie, *Mulackstrasse 32: Slide Projection of Former Kosher Butcher Shop (1930)*, 1992, chromogenic print, Cleveland Museum of Art, https://www.clevelandart.org/art/2017.219.

The projection mapping technique requires precise manipulation of static alignment to map imagery onto a building facade. Attie's work presents site-specific image alignment that mirrors contemporary projection mapping techniques. Such work often requires high-lumen digital projectors, environmental control, and accurate calibration using software tools such as TouchDesigner or MadMapper[27]. It normally requires high financial cost associated with this hardware and software. Delivering the intended visual effects can be particularly challenging in outdoor contexts, where external environmental factors must be carefully managed.

Research into the combination of AI as a tool for both non-interactive and interactive installations introduce new approaches and insights in human-computer interaction, an area that continues to influence artists and designers in how they express ideas and construct visual presentations. An example of this emergent collaboration is Refik Anadol's *Machine Hallucinations – Unsupervised* (2022), an AI-generated data sculpture displayed on an LED screen, which exemplifies how machine learning algorithms can process vast datasets to create immersive visual narratives. This work illustrates how AI can function not only as a tool, but as a creative collaborator, transforming human-computer interaction into a generative cultural practice (See Figure 4) [28].

[27] Sean A. White, "Projection Mapping: The Art and Science of Illuminated Architecture," *IEEE Computer Graphics and Applications* 33, no. 1 (2013): 20–27, https://doi.org/10.1109/MCG.2013.9.
[28] Refik Anadol, *Machine Hallucinations – Unsupervised*, 2022, https://refikanadol.com/works/unsupervised/.

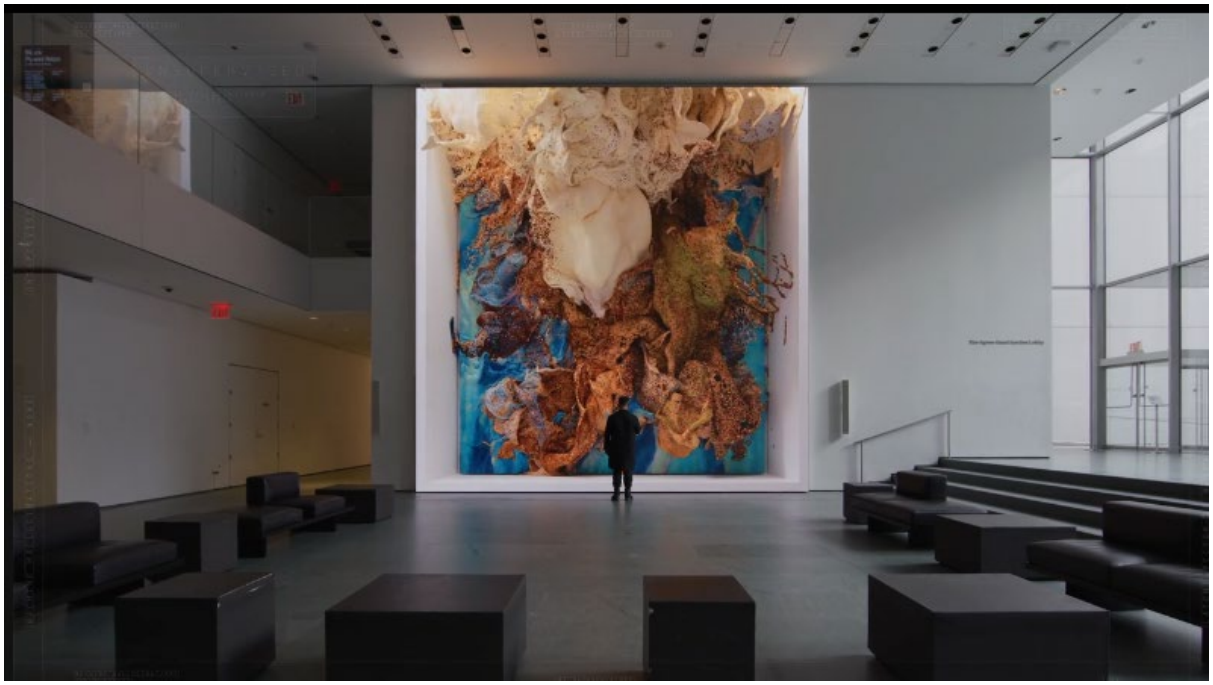

Figure 4. Artist: Refik Anadol. Title: "Machine Hallucinations – Unsupervised." Medium: AI-generated data sculpture on LED screen. 2022[29]

Discussion surrounding the creation of interactive spaces through visual design is growing, and approaches can vary depending on the exhibition space, purpose, and context. My research focuses on creating an experience that revisits personal memory through the integration of digital and traditional media, incorporating both programmable and non-programmable visual effects. By combining these elements with projection mapping, I can overlay visual effects onto physical media and construct an immersive 180-degree circular space for memory remapping. This real-time interactive environment serves as a means for the audience to define their own memory journey by engaging with my exploration of memory. Through this experience, viewers are offered an opportunity to reconnect with their culture, past events, and personal histories, revitalizing them through reflective and self-guided exploration.

[29] Ibid.

Chapter 6. Reconstructing to Remember: The Adaptive Nature of Memory

6.1. Memory Remediation between Traditional and Interactive Media

The central theme of my work explores the nature of memory, both tangible and intangible. I draw upon Lev Manovich's theory in The Language of New Media (2001), which outlines how culture and memory are transformed through digital processes[30]. I reference his concept of "Deletion and Substitution," which refers to how computerized media tend to erase or replace elements when representing the world. This concept is especially relevant to my work, as I use digital tools to deconstruct and recompose memories, emphasizing how memory is not preserved intact, but continuously edited and remediate through media. This showcases the commonality that I found in memory and digital media are both programmable and erasable. Therefore, I investigated the fluid memory of three stages of my life, where I found it has the most emotional connections and is memorable by using digital media. Also, a series of interactive artworks were created for experiment combining with video, illustration and animations.

My approach to memory spatialization is inspired by Andreas Huyssen, who argues that cities function as palimpsests of historical and personal narratives, with architecture, landscape, and surroundings shaping and preserving cultural memory[31]. Drawing from this idea, I incorporate Taiwanese architectural motifs and elements to reconstruct the environments I have lived in. Through projection mapping, interactive media, and gesture recognition, I reintroduce erased cultural memories by layering stored photographs, animations, and moving images. These digital materials simulate a journey of memory

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[30] Manovich, The Language of New Media,31.

[31] Huyssen, Andreas. *Present Pasts: Urban Palimpsests and the Politics of Memory.* Stanford, CA: Stanford University Press, 2003.

exploration, inviting the audience to engage with both tangible and intangible traces of the past. In my exhibition, a revealing mechanism is built into the projection mapping: as viewers move from left to right, the density of particles accumulates, gradually uncovering forgotten scenes and cultural fragments.

Additionally, I take advantage of gestures to set up an analogy the process of memory recollection, including turbulence effects emerge when audiences move their hands rapidly back and forth, symbolizing external influences that distort and blur memories over time.

Furthermore, I discussed the idea of evolving aura, when artwork is represented from one media to another. I referenced Walter Benjamin's seminal concept of "aura" in The Work of Art in the Age of Mechanical Reproduction (1969) to argue the idea of losing authenticity in artwork, once it is reproduced. He posits that the uniqueness and authenticity of an artwork vanish once it is mechanically reproduced[32]. However, I challenge this notion by suggesting that interactive media can foster a new, dynamic form of "aura." By integrating projection mapping with my acrylic paintings, I create an interplay between static traditional art and ephemeral digital effects, allowing audiences to experience both the tangible permanence of painting and the transient, evolving nature of digital media for memory recollection. This juxtaposition highlights the complementary relationship between transient and permanent memory, reflecting how cognitive processes continuously generate and forget memories based on cultural and environmental factors.

I draw my idea from his series of his work named "Machine Memory", created by Refik Anadol, who is a Digital Media artist centering the research on data driven AI hallucination, the intersection of human and AI creativity.[33] The way he achieved the notion

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[32] Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction", in *Illuminations*, ed. Hannah Arendt, trans. Harry Zohn (New York: Schocken Books, 1968), 217-252.

[33] Refik Anadol, "Machine Memory," accessed March 6, 2025,https://refikanadol.com/works/machine-memoirs-space/

of recreating or reproducing space started from collecting data, photographs, from NASA's satellites and spacecraft documenting the ongoing-changes of celestial bodies (see Figure 4).[34]

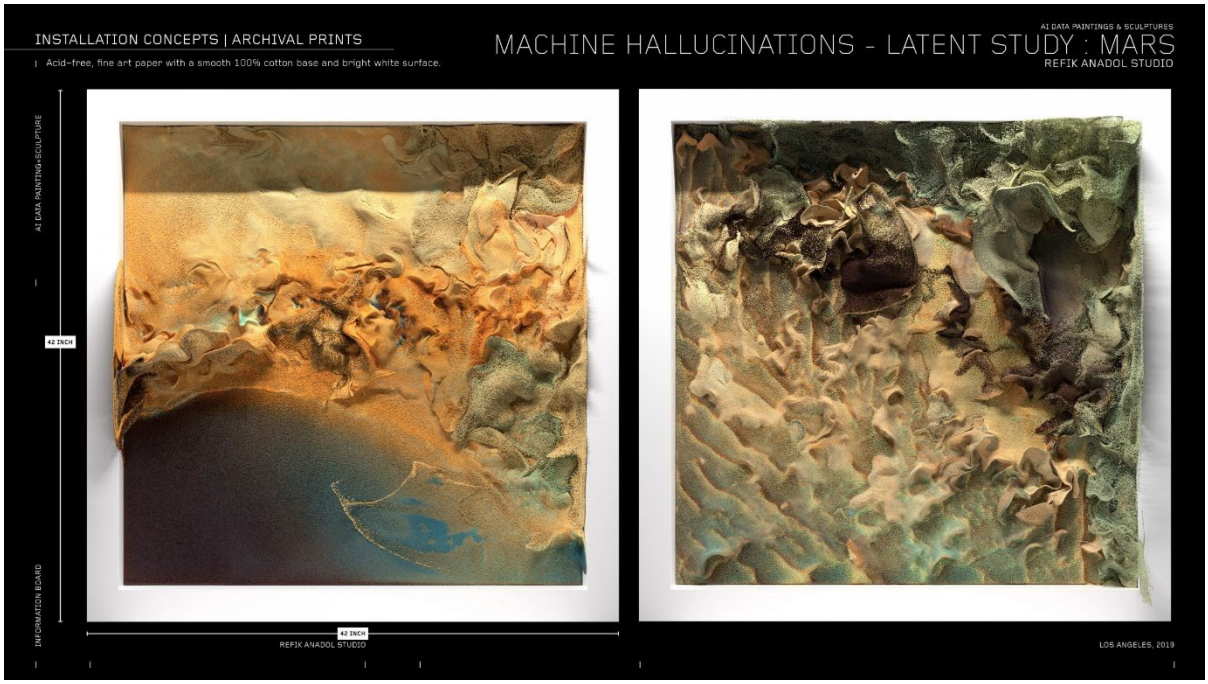

Figure 5. Refik Anadol, *Machine Hallucinations: Latent Study—Mars.019,* 2021. Digital image. Courtesy of Refik Anadol Studio. https://refikanadol.com/works/machine-hallucinations-latent-study-mars/.[35]

In everyday language, hallucination involves perceiving things that aren't present such as hearing voice, triggered internally yet felt as real[36]. In AI, hallucination refers to content that appears possible but is fabricated due to algorithmic intervention. His idea of Machines hallucination is achieved by training on tens of thousands of images; his AI doesn't merely replicate new but synthesizes the image by presenting uncanny visual landscapes that reveal hidden patterns in collective memory.[37] This idea informs the concept of using images my traditional painting as my memory unit for the digital media and audience to dream and

[34] Refik Anadol, *Machine Hallucinations: Latent Study—Mars*, accessed May 24, 2025, https://refikanadol.com/works/machine-hallucinations-latent-study-mars/.
[35] Refik Anadol, Machine Hallucinations: Latent Study—Mars.019, 2021, digital image, Refik Anadol Studio, accessed May 24, 2025, https://refikanadol.com/works/machine-hallucinations-latent-study-mars/.
[36] *"Hallucination,"* Wikipedia, last modified June 23, 2024, https://en.wikipedia.org/wiki/Hallucination.
[37] Refik Anadol Studio, "Machine Hallucinations – MoMA," accessed June 25, 2025, https://refikanadol.com/works/machine-hallucinations-moma/.

interact with to create a dialogue in the exhibition space. It reflects the analogy of collective memories that humans all live with and represent the beauty of the universe (see Figure 5).

6.2. Memory Hallucination and Interactive Media: Integrating AI into the Reconstruction of Memory

Memory is neither static nor linear, instead it is a fluid, a constant adapting process shaped by evolvement of personal experiences and feelings, and the tools we use to engage with our memory. In the realm of interactive media, the convergence of traditional art and emerging technologies affords artists new forms for interpreting and reimagining memory. I found out the commonality and connection between memory recollection and machine (AI) image generation. It shares the aesthetics of vagueness and distance. The mechanism of human memory recall has been actively studied. Much research suggests that memory is never entirely clear, as the very act of remembering alters the memory each time. By examining the layered complexity of memory and how it forms throughout my project, I discovered that even vivid memories can be inaccurate. Sometimes, what we recall with clarity may never have occurred. This realization led me to explore the concept of hallucination in my project. The discussion expands into a comparison between the capabilities of machine hallucination and the human memory recall process, focusing on how both can be visualized to reflect their influence on perception and recollection.

I perceive that AI hallucination does not merely imitate human imagination but instead reveals how technological systems reflect aspects of human recollection and cognition. While humans experience imagination consciously, AI generates hallucinations without awareness or understanding. What AI hallucinates are not experiences, but rather errors rooted in the datasets and biases fed into the system. In this way, AI functions as a mirror. It projects our own cognitive patterns, distortions, and cultural preconceptions, interpreted through collective lens. Therefore, AI hallucinations do not derive from self-awareness, but they do

expose how our collective knowledge, societal structure and imaginative patterns are encoded into the systems we build. In theory that proposed by Daniel Schacter of the “seven sins of memory” he examines this issue, highlighting that one of its central beliefs is the susceptibility of our memories to distortion and misattribution as time passes[38]. This theoretical concept assists in framing my use of AI not merely as a tool, but as a collaborator in depicting the unstable, faulty and adaptive nature of memory.

Contemporary artists such as Anadol investigates the interplay between technology and memory by using machine learning to recreate the data structures into immersive visual representation. In his project, he fed millions of publicly available photographs into neural networks to produce dreamlike, shifting landscapes[39] His approach aligns closely with my own practice, which integrates AI-generated video projections, sourced from my acrylic paintings, to suggest a memory-space that feels familiar yet unstable. It invites viewers to question the authenticity of what they recall or perceive.

[38] Daniel L. Schacter, The Seven Sins of Memory: How the Mind Forgets and Remembers (Boston: Houghton Mifflin, 2001).
[39] Refik Anadol, Machine Hallucinations, accessed April 2025, https://refikanadol.com/works/machine-hallucinations/.

Chapter 7. Project Development Platform

This section outlines the technologies, both software and hardware, used in the development of the thesis project. The project originates from my acrylic paintings, which are expanded into a spatial experience through various forms of engagement and presentation. A combination of digital tools, physical devices, and mixed media is employed to construct the overall interactive experience.

7.1. Resources

The development processes were implemented using the following resources:

1) Traditional Art Supplies
    a) Amsterdam acrylic Paints
    b) Canvas 30P 92 x 73cm
2) Software
    a) Programs from Adobe Creative Suite: Adobe Premiere Pro, Photoshop, After Effects, and Illustrator.
    b) TouchDesigner (Non-Commercial)[40]
    c) MediaPipe (Used in TouchDesigner for Face and gesture detection) [41]
    d) Blender [42]
    e) MadMapper[43]

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[40] TouchDesigner is a node-based visual programming platform used for creating real-time interactive multimedia content. Developed by Derivative. https://derivative.ca/

[41] MediaPipe is an open-source framework developed by Google for building cross-platform, real-time applications using machine learning and computer vision, often being used for face detection and gesture recognition. https://ai.google.dev/edge/mediapipe/solutions/guide

[42] Blender is an open-source 3D creation suite used for modeling, animation, rendering, compositing, and motion tracking. https://www.blender.org/

[43] MadMapper is a professional video mapping software designed for projection mapping and LED mapping. It allows artists and designers to map visuals onto physical surfaces in real-time, offering an intuitive interface for spatial design. https://madmapper.com/

f) KantanMapper (Built-in Projection Mapping tool in TouchDesigner)[44]

g) Stoner (Built-in Projection Mapping tool in TouchDesigner)[45]

h) Generative AI platforms like: Runway[46], StableDiffusion [47], Adobe Firefly[48]

3) Hardware

a) Nikon D5600 camera

b) ASUS ROG Zephyrus G16 Laptop (12th Gen Intel(R) Core (TM) i7-12700H 2.30 GHz) Graphic Card: NIVIDA RTX 4070

c) Logitech C270 HD Webcam

d) Four Nebula 4k projectors

e) Seven NEC P502HL projectors

f) Camera Tripod

g) Studio Lighting kits

4) Cove Studio (Green Room, location W426)

5) Exhibition space

a) Penny Gallery standard exhibition space

b) The semicircular projection room

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[44] Kantan Mapper is a built-in projection mapping tool within TouchDesigner. It allows users to quickly map video content onto 2D surfaces using a polygon-based interface. https://derivative.ca/UserGuide/Palette%3AkantanMapper

[45] Stoner is projection mapping tool in TouchDesigner, designed for corner pinning and warping images onto irregular or curved surfaces. https://derivative.ca/UserGuide/Palette%3Astoner

[46] Runway AI is a cloud-based creative suite that provides machine learning tools for tasks such as image-to-video generation, video editing, and real-time AI effects, accessible through a user-friendly interface. https://runwayml.com

[47] Stable Diffusion is a deep learning model developed for generating images from text prompts using a latent diffusion process, widely used in AI-assisted art and design. https://en.wikipedia.org/wiki/Stable_Diffusion

[48] Adobe Firefly is a generative AI tool developed by Adobe, enabling users to create images, text effects, and design elements from text prompts, integrated into Adobe Creative Cloud applications. https://www.adobe.com/sensei/generative-ai/firefly.html

The project started with the idea of recreating a space in use of the elements of digitalized work from my acrylics panting to combine with video plates of me wandering in space to illustrate the idea of memory exploration. To begin with, the video plate of wandering in space was captured in the green room "The Cove Studio" (W426) at the University of Lethbridge with a Nikon D6500 DSLR camera. Adobe After Effects was employed for tasks such as animation, visual effects, chroma keying and compositing. Adobe Photoshop was used to enable image expansion, background removal, color grading, and correction, providing greater creative flexibility and setting up layered compositions to be enhanced later in After Effects. In some cases, I used the Firefly generative AI platform in combination with manual editing to extend my original paintings into layered backgrounds of correct aspect ratio as a basis for compositing in After Effects. The purpose of this process is to ensure preserving the original visual style of the traditional paintings into the After Effects video applications.

TouchDesigner was used for projection mapping and real-time visual programming to create a spatial immersive experience for the audience. I experimented with generative AI platforms such as Stable Diffusion[49] through the TouchDesigner interface, using Computerrender API.[50] This more complex process is used to allow visual style consistency between my traditional paintings and the expanded digital environment. The affordances of the immersive interactive space allow highlighting the dynamic process of memory recollection in a remediated form that involves the clash and convergence of digital and traditional spaces and materiality.

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[49] Stable Diffusion is a deep learning model developed for generating detailed images from text descriptions. https://en.wikipedia.org/wiki/Stable_Diffusion

[50] Computerender is an online platform that provides real-time image-to-video rendering through API access, enabling dynamic AI-generated visuals.https://computerender.com API stands for Application Programming Interface. Computerrender is a web browser API which can be called inside TouchDesigner to access the Stable Diffusion generative AI platform. https://en.wikipedia.org/wiki/API

Runway AI was used separately to generate video based off my original artwork, presenting the imagery and environment of my hometown, which is different from acrylic paintings.

Projection mapping is central to my thesis project; it has been created using TouchDesigner and MadMapper. Projection mapping has been used in two main ways. These include a dedicated Circular Projection Room in the Penny Gallery and, separately, a three-wall installation space, included in the standard Penny Gallery exhibition area.

Additional traditional video work was developed as part of the project experimentation. This is also presented in the exhibition in two formats: separate wall projections and presentations on computer monitors. Some of this work is considered to contribute as stand-alone components of the thesis project, while other parts of this work are presented as output from my research experimentation describing the work process.

7.2. Development of Immersive Spatial Experience

The development of this immersive spatial experience is based on the integration of my original traditional artwork with projection mapping and interactive 3D spatial technologies. The process started with acrylic paintings on three 30P canvases, which served as the initial foundation for creating imagery that corresponds to the environments representing different stages of my life (see Figure 6). The interactive particle effects were created using TouchDesigner, with great amount of time spent manipulating and fine-tuning the parameters to achieve the intended turbulent visual effects. This process involved pairing datasets from MediaPipe with image and audio parameters in my work. MediaPipe enables the development of applications that can process and analyze visual and auditory sensory data in real time. Incorporating the MediaPipe plugin significantly enhanced the immersive quality and interactivity of the piece.

The task of linking visual elements to specific MediaPipe parameters (see Figures 7 and 8) was time-intensive and required repeated experimentation to produce the desired interactive outcomes. Additionally, the integration of the particle system with MediaPipe's gesture recognition functionality allowed me to create more captivating and immersive scenes, further enriching the audience's sensory engagement.

Figure 6. Artist: Yu-Chia Pai. Title: "The Clash - Physical Media and Virtual Spaces." Photograph of the process of creating Acrylic Paint, April 2025.

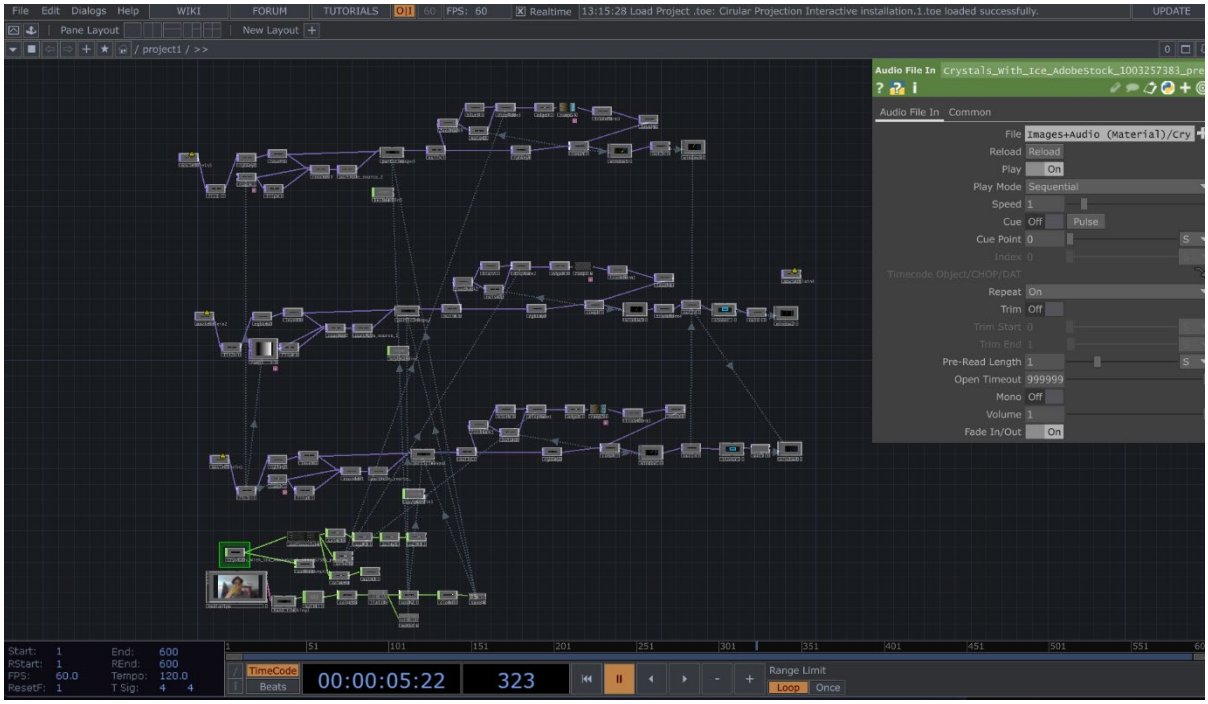

Figure 7. Artist: Yu-Chia Pai. Title: "The Clash - Memory Remapping through Circular Interactive Space." screenshot of the workflow of creating Interactivity in TouchDesigner, April 2025.

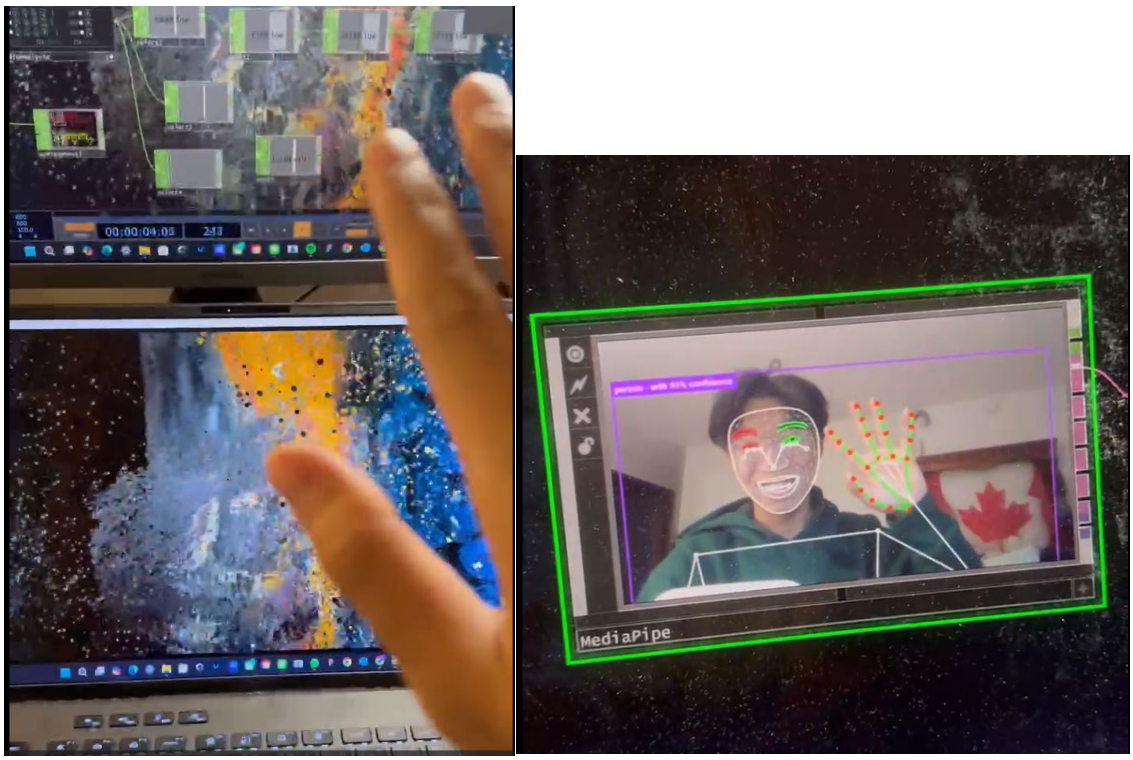

Figure 8. Artist: Yu-Chia Pai.Title: "The Clash - Memory Remapping through Circular Interactive Space." Photograph of the process of creating Acrylic Paint, April 2025.

Along the side of the interactive development process, my visual effects were mainly produced with Media Pipe based real-time interactive effects. However, because real-time

processing is demanding on computer power, some of the interactive works are used only in video format rendered out during the testing session to facilitate smooth user experience.

7.3. Projection Mapping

The projection mapping for this project was primarily implemented in the circular projection room at the Penny Gallery. The main software used was TouchDesigner, with three Nebula 4K laser projectors supporting the circular projection setup. While these laser projectors offered high-quality visuals, the maximum output resolution from TouchDesigner was limited to 1280×1280 pixels, which might be considered as a constraint on the overall image clarity. However, the resolution was sufficient for effective presentation within the circular projection mapping installation.

To preserve image quality, the output was divided into three separate channels, each maintaining a resolution of 1280×1280 pixels. Among the available mapping tools, Stoner in TouchDesigner proved to be more effective than Kantan Mapper in aligning visuals with the curvature of the walls and achieving a more refined final output. To ensure the success of the interactivity and immersive circular effects, preliminary testing was conducted in the Penny Gallery prior to the official exhibition (see Figure 9). Additional projection mapping for the three-wall installation was handled with three P502HL projectors. Projection mapping in the three walls niche is done with Madmapper.

Figure 9. Artist: Yu-Chia Pai. Title: "The Clash - Memory Remapping through Circular Interactive Space." Photograph of the projection experiment process using “Stoner ” tool in TouchDesigner April 2025.

Moreover, projection mapping on canvas was tested using MadMapper, which was possible because Madmapper had lower hardware demands. MadMapper allowed me to easily select and mask areas to align the content with the canvas image accurately. The original plan for the installation involved creating an enclosed space using mobile walls to enhance the sense of immersion. However, due to the projection ratio of the NEC P502HL projectors, the distance required between the projectors and the canvas did not align well with the frame. To address this, the mobile walls were repositioned in a more spread-out configuration to accommodate these limitations (see Figure 10).

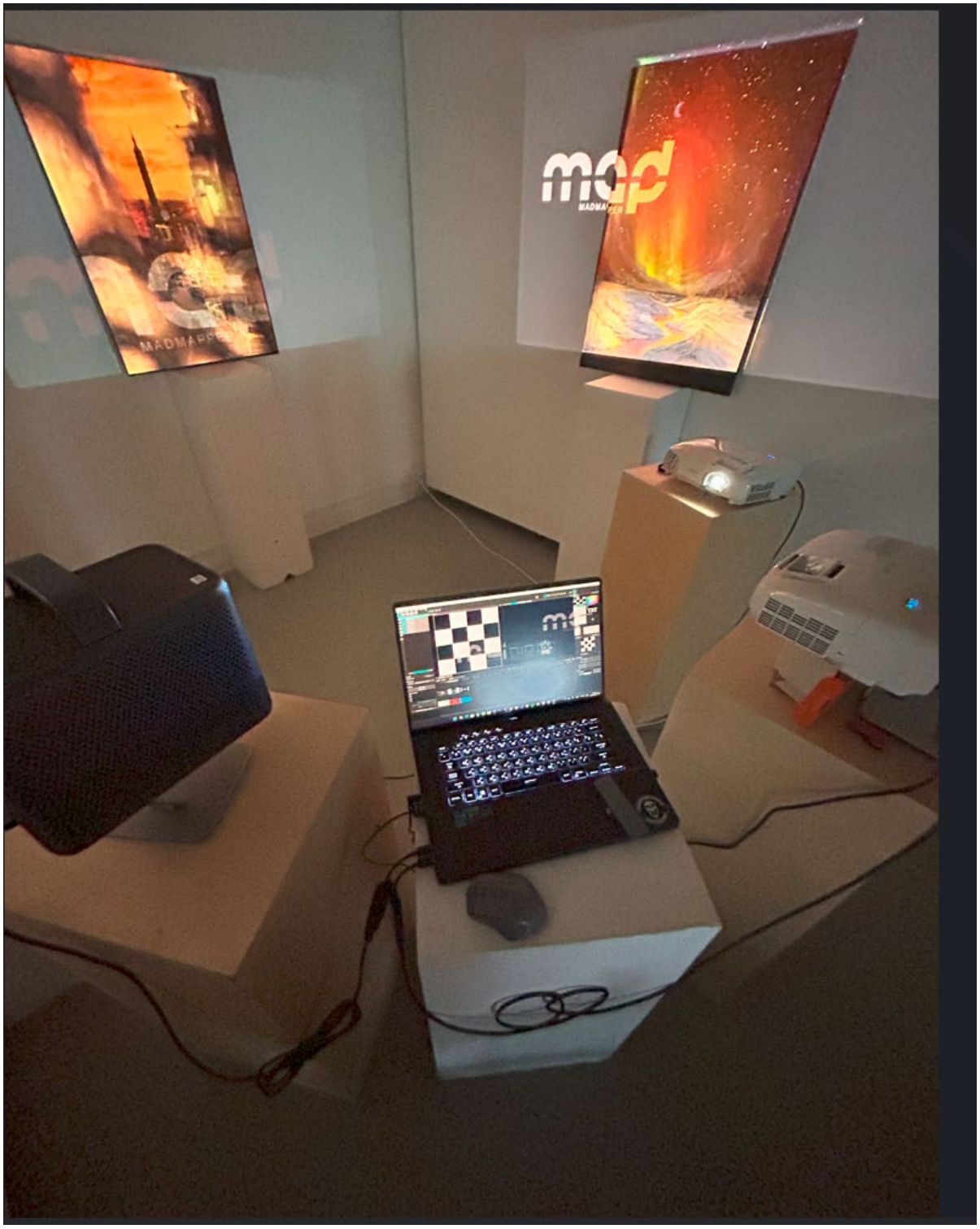

Figure 10. Artist: Yu-Chia Pai. Title: "The Clash - Memory Remapping through Circular Interactive Space." Photograph of the projection experiment process using Mad Mapper, April 2025.

Chapter 8. Visual Style and Thesis Project Design

8.1. Project Conceptualization

The Clash, my MFA thesis project, explores the ongoing process of recollection, combining past and present experiences, environments, and cultural perspectives. The central focus of this project is to investigate how interactive digital media can engage with and visualize the formation of memory. By combining projection mapping, animation, interactive design, digital and traditional painting, and AI-assisted content generation, I construct a digital collage that expresses personal experiences and maps my emotional relationship to memory. This conceptual inquiry is grounded in several art styles and theoretical influences that have deeply shaped my creative process. The following sections outline how Surrealism, Symbolism, and emerging digital media tools inform the structure, narrative, and aesthetics of the project. These frameworks support my exploration of memory as a fluid, fragmented, and recontextualized phenomenon.

8.2. Influences on Visual Style

In addition to contemporary influences previously discussed in the thesis, the stylistic conceptualization of my MFA work is mainly inspired by Surrealism and Symbolism, which I discuss below.

I am fascinated by the concept of creating virtual environments that defy physics and associate random elements in dream-like worlds. This is inspired by Dalí's work "The Persistence of Memory", which exemplifies the idea by presenting a transformed reality where time's "softness" and "hardness" are visually depicted, reflecting the fluidity and

rigidity in Dalí's perception of time.[51] The experience of the ongoing changes in my life and the unfamiliarly to digital media have led to shifting views and created a new reality. I adopted the Surrealist core idea of representing the unconscious through a world of collapsed physics laws[52]. I searched for a way to represent my new reality to express the essence of my artistic escape and illustrate the unsettling environment and the feelings I experience because of it. This is exemplified by Dali's painting Sewing Machine with Umbrellas in a Surrealist Landscape, which usually interprets French poet Lautreamont's famous metaphor of a sewing machine and an umbrella on a dissecting table: "as beautiful as the chance encounter of a sewing machine and an umbrella on a dissecting table (see Figure 11)." [53]

[51] Salvador Dalí, *The Persistence of Memory*, 1931, Museum of Modern Art, New York. https://www.moma.org/collection/works/79018.

[52]André Breton, "Manifesto of Surrealism," in *Manifestoes of Surrealism*, trans. Richard Seaver and Helen R. Lane (Ann Arbor: University of Michigan Press, 1972)

[53] Salvador Dalí, *Sewing Machine with Umbrellas in a Surrealist Landscape*, 1941. Discussed in "Salvador Dali Sewing Machine with Umbrella," *Widewalls*.

Figure 11. Artist: Salvador Dalí. Title: "Sewing Machine with Umbrellas in a Surrealist Landscape." Medium: Oil on canvas. 1941.[54]

In my work, I alternate memories that emerge organically in my life into a Surrealism-inspired world, drawing on the unconscious and innate to create contradictory juxtapositions in my search for a desired reality. My work influenced by Surrealism concepts, styles, and technique~~,~~ allowing me to experiment with my ideas in more challenging ways by integrating different media.

Using an approach characteristic for Symbolism, I reassemble cultural motifs, objects and memories, leading to the emergence of new meanings and interpretations bridging my past and present.

[54] Heide Museum of Modern Art, *Salvador Dalí* (1904–1989), *Sewing Machine with Umbrellas in a Surrealist Landscape* (1936), *Dancing Umbrellas*, accessed May 24, 2025, https://dancingumbrellas.heide.com.au/post/140420970265/salvador-dali-1904-1989-sewing-machine-with.

Roland Barthes's idea of the "death of the author" further enriches this discourse, suggesting that the interpretation of these symbols can vary widely among viewers, thus creating a multifaceted interaction between the artwork and its audience [55]. This approach helps bridge my personal and cultural memories in the space of *The Clash* and engage viewers for new interpretations.

8.3. Synthesis of a Surreal-Symbolic Virtual Space

Under combined influences from Surrealism and Symbolism, I create a dynamic in which elements in my work express meaning both explicitly and implicitly, revealing my inner-world through dreamlike or contradictory imagery. Symbolism influences play a key role in how I embed meaning into the visuals using various cultural motifs. These embedded meanings can trigger viewers to reflect, inviting them to connect the symbols to their own day-to-day experiences. This way, I shape my virtual space using cultural motifs from my personal history simultaneously evoking a sense of alienation and familiarity. The visual discourse in my work expresses my fragmented memories and culture that exist in me. Symbolic images, patterns, and objects drawn from earlier stages of my life are reinterpreted and recreated in the virtual space to counteract feelings of unease and anxiety, gradually moving toward a sense of internal peace.

This approach allows the embodiment of my memories and reflections in a surreal landscape of symbolic evocation, enriching the emotional dimensions of the project[56]

8.4. Exploration in Digital World

Over the course of project development, I experimented with various ways to present my ideas. This includes work with chroma key compositing to place myself into the spaces I

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[55] Roland Barthes, “The Death of the Author,” in Image, Music, Text, trans. Stephen Heath (New York: Hill and Wang, 1977).
[56] Ibid.

created. I also redesigned and animated traditional patterns and motifs captured from the architectural elements of Taiwan, using both 2D and 3D graphics in the experimental process.

The first video highlights my insecurity and unease with the digital world. I utilized textures from my previous acrylic artworks to juxtapose “Tradition” and “Digital” through color, texture, and composition. In the first video titled " *The Clash* – Exploration in Digital World (The Interplay Between Traditional Media and Digital Media)" I use a surreal approach to illustrate a dream-like world, emphasizing contradictions of space and size. The dominant blue palette creates harmony and balance, instilling a sense of calm (see Figure 12). The strong blue-orange contrast creating the centre of interest is meant to suggest the influence of digital media capturing my attention.

Figure 12. Artist: Yu-Chia Pai. *The Clash — Exploration in Digital World (The Interplay Between Traditional and Digital Media).* 2D animation and video by Yu-Chia Pai, 2023. This 2D animation creating virtual space by using my acrylic painting works and experimenting chroma key compositing to illustrate the dream-like scene.

The video titled " *The Clash* – Exploration in Digital World (The Psyche)" I created a scene to reflects the confusion I experienced in the digital world by using visual effects that simulate the intense beams of light emitted by digital devices (see Figure 13). The symbolic sun at the centre, featuring a face, represents myself, observing the world from the sun's perspective. In middle ground, a 3D animated river symbolizes the flow of technology, while circular objects floating on its surface resemble memory fragments, akin to blood platelets in the human body.

Additionally, the pattern of figures seated on the cliffs symbolizes audiences witnessing the effects of digital media and how it influences the way people express and present their ideas (see Figure 13).

Figure 13. Artist: Yu-Chia Pai. *The Clash – Exploration in Digital World (The Psyche).*Depicted in 2D animation and video with 3D elements. This 2D animation creating virtual space by using my acrylic painting work and experimenting chroma key and virtual light effect in After Effects to illustrate the dream-like scene, 2023.

The work titled " The Clash – Exploration in Digital World (Past and Present)" juxtaposes modernity and tradition within the environment (see Figure 14 and 15). Here, I strive to find a balance that retains the aesthetics of arts in traditional culture to present how technology influenced the way I relate the present and past to the environment that I used to live in my country of origin. The old architectural images highlight the aesthetics of traditional Taiwanese culture that I have managed to preserve as part of who I am. Inside

each window, my struggle to find solutions for creating artwork that achieves harmony and brings out the beauty of traditional arts and cultural aesthetics in digital media is presented.

Figure 14. Artist: Yu-Chia Pai. *The Clash — Exploration in Digital World (Past and Present).* Depicted in 2D animation with 3D elements. This animation explores the creation of a virtual space to experiment with "transition" within the video sequence. 2023.

Figure 15. Artist: Yu-Chia Pai. *The Clash — Exploration in Digital World (Past and Present)* Depicted in 2D animation and videos. This created the visual narrative of the relationship between my inner world and the changing environment, 2023.

8.5. Physical Media and Virtual Spaces

I explored the tactile qualities of traditional media as a method of documenting personal memory, using acrylic painting as the foundation. The triptych encapsulates the three key locations that I lived throughout my life, representing periods from childhood, undergraduate and my graduate studies. It emphasizes the evolving imagery of what remains the same in the long term, and what is constantly changing. In the relation between the painted surface and video projection, the video art layer functions as a digital trace of memory retrieval, ephemeral and ever shifting. The projected video plates present the current appearance of each place, including the streets of Chiayi, the cityscape of Taipei, and the aurora-filled skies of Lethbridge. By adding the dimension of time through video projection onto the canvas, the work juxtaposes the ever-changing visual landscape of memory with the stillness and permanence of painted representation. The vibrancy of the colors in both the paintings and video projections creates a focal point that underscores the dynamic between long-term and short-term memory. This contrast highlights how memories can shift in form and meaning when expressed across different mediums, visualizing the tension between permanence and transience in memory. Through layered renderings of patterns and architectural references, each visual element contributes to a collage that represents the distinct but interconnected stages of my life (see Figure 16).

Figure 16. Artist: Yu-Chia Pai. *The Clash — Tangible and Intangible.* This work creates a visual narrative exploring the relationship between physical media and digital media in memory reconstruction.

8.6. Memory Remapping through Circular Interactive Space

The work titled "The Clash - The Particle Memories" explores the fragmented nature of memory, with a focus on the alteration and recontextualization in both meaning and interpretation.(see Figure 17 and 18).The digitalized acrylic paintings featured here represent three distinct phases of my life: childhood, undergraduate studies, and graduate studies, extending the narrative initiated in the *Tangible and Intangible* scene. In the use of real-time gesture-based interaction technologies, viewers are invited to actively engage with these memory representations. When a participant moves their hand to the right, the image begins to clarify, and particles converge, symbolizing the process of recollection. As the particles subsequently disperse into disarray, the visual effect conveys the instability and elusiveness often associated with memory retrieval. When the participant lowers their hand, the scene softly returns to its original state, emphasizing the ephemeral and fluid nature of remembrance. The visual features hues yellow and blue, drawn from my original painting's color palette—primarily grey, black, and yellow—alongside a liquid-like blue background. This combination enhances visual focus while maintaining aesthetic consistency throughout the work. The particle system visual effect adds another layer to the original piece, which is presented in a surreal-symbolist style. It incorporates symbolic motifs and patterns—such as traditional Taiwanese architecture, street signboards, and the Lethbridge train bridge—to

construct a surreal scene. This composition is further enriched by the interactive particle system, evoking an aesthetic reminiscent of pointillism, where dispersed points dynamically reassemble through audience interaction.

Figure 17. Artist: Yu-Chia Pai. Title: " The Clash — The Particle Memories,"180-degree. Interactive Projection Mapping. 2025

Figure 18. Artist: Yu-Chia Pai. Title: "The Clash — The Particle Memories," 180-degree Interactive Projection Mapping. 2025

8.7. Virtual Rediscovery of Memory

This video illustrates the concept of memory exploration by emphasizing the process of memory reconstruction through intentional and focused engagement. The act of recollection often requires concentrated attention, drawing upon specific objects or moments to trigger associations. The work reflects my personal connection to the environments, cultural elements, and surroundings that actively shaped my lived experiences. To express this in 3DI use Blender to manipulate image of FamilyMart convenience store from my neighborhood in Taiwan, where I frequently visited with my family. In the first scene (see Figure 19), vibrant lighting, passing cars, and pedestrians capture the bustling energy of urban life, evoking the warmth of social gatherings with family and friends that often lingered late into the night. The second scene (see Figure 20) depicts the rural countryside where I spent my early childhood before relocating to a more urban setting. The imagery conveys a sense of immersion in nature, featuring traditional Taiwanese architecture, power poles, and symbolic red trees on either side, meant to represent the heat and humidity embedded in my memory of that place. In Scene Three (see Figure 21), a symbolic architectural structure titled the "Bell

Tower" is introduced. Designed by me and surrounded by mountains, the tower stands as a metaphor for personal identity and cultural heritage. The background includes video footage of birds in flight, a setting sun, and distant mountains—symbolizing the passage of time and the ephemeral nature of memory within the broader rhythm of the universe. Complementing this, the particle system in this section not only conveys the visual effect of vagueness associated with the act of memory retrieval but also interacts with circular mask instances that reveal portions of the scene. This interaction creates a dynamic process of visual exploration, allowing the audience to actively engage with and experience the conceptual theme of memory reconstruction.

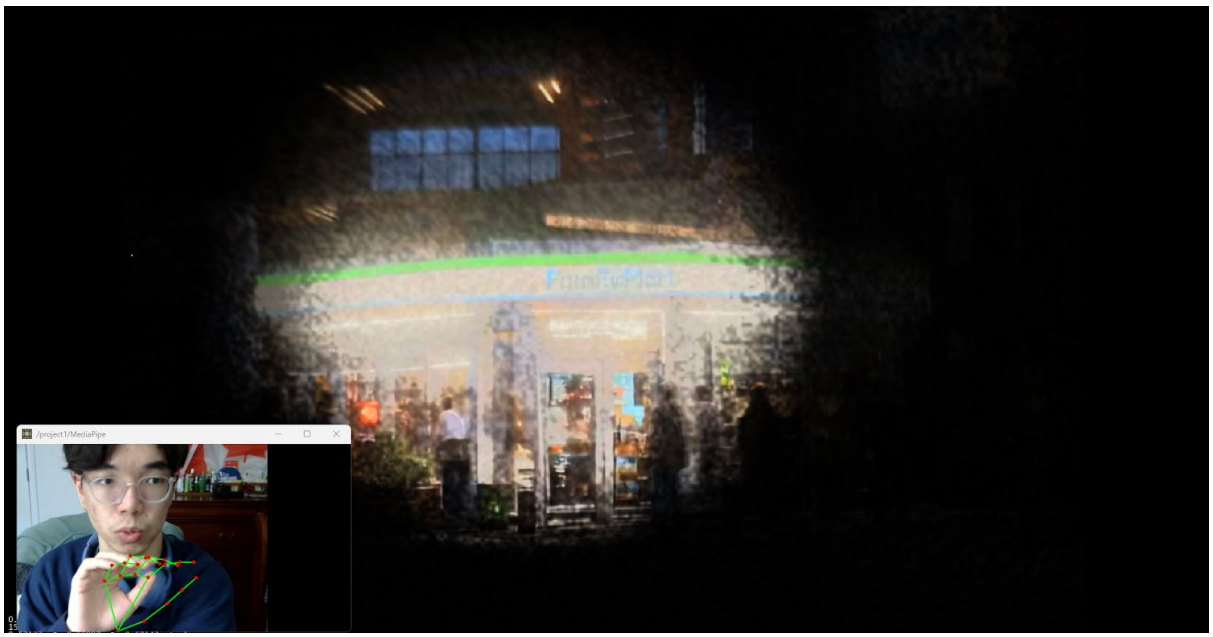

Figure 19. Artist: Yu-Chia Pai. Title: "The Clash — Memory Discovery." Image to Video AI generation and video installation, 2025

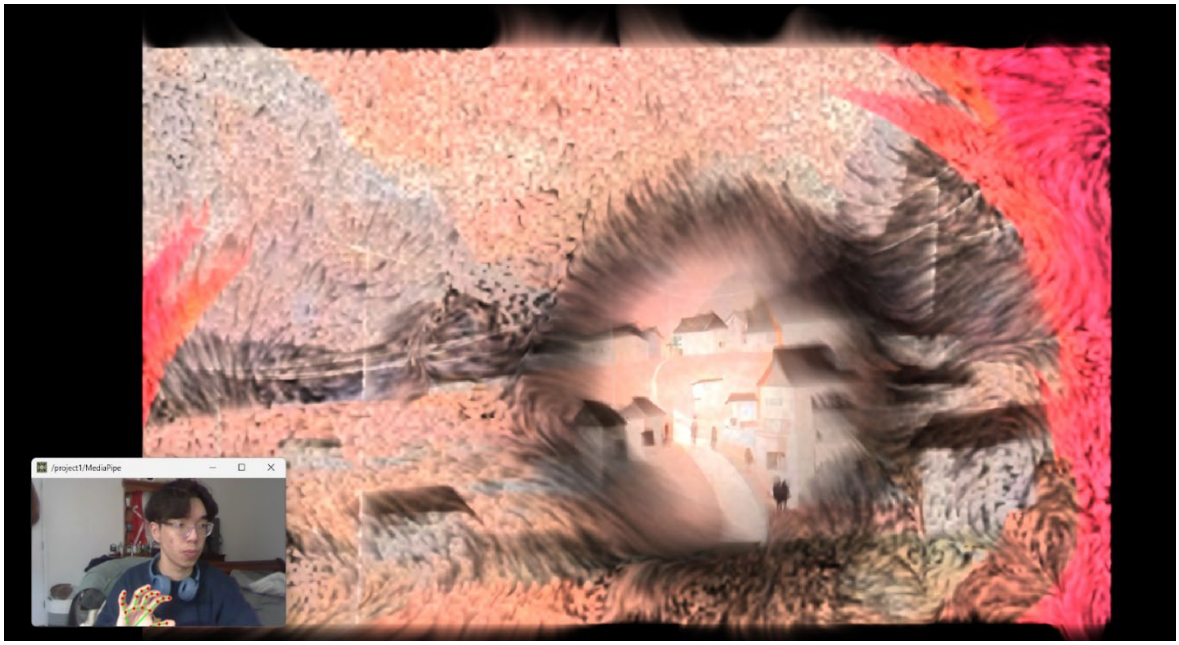

Figure 20. Artist: Yu-Chia Pai. Title: " The Clash — Memory Discovery." Image to Video AI generation and video installation, 2025

Figure 21. Artist: Yu-Chia Pai. Title: "The Clash — Memory Discovery." Animation with Particle System in TouchDesigner, 2025

8.8. Memory Expansion through Generative AI

This video reflects on the concept of memory hallucination by reflecting on how humans and machines differ in the ways they create imagery. The video sequences are generated from my original acrylic paintings, which were input into an AI model (Stable Diffusion) via Computerrender API (see Figure 22)

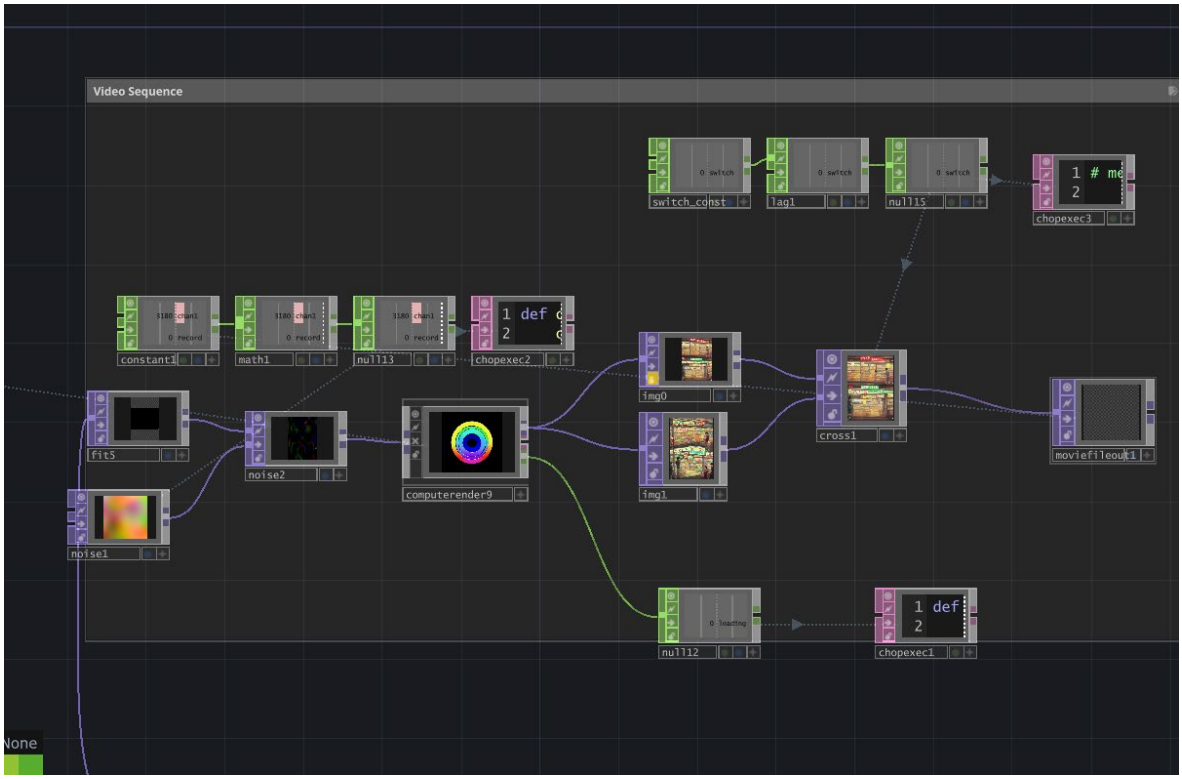

Figure 22. Screenshot showing the blueprint structure of the visual programming process developed by Yu-Chia Pai in TouchDesigner. 2025.

Using prompts, I guided the AI to reimagine my paintings as dream-like videos, preserving their structure while transforming their emotional tone. This process reflects how human memory often works: fragmented, reconstructed, and not always accurate. By presenting the AI's interpretation alongside my original artwork, I invite viewers to reflect on the nature of hallucination and memory, whether experienced by a human or generated by a machine. I examine the idea by rendering videos in Touch Designer using Computerrender API key (see Figure 23). The API key allows generating its own vision of Taiwan following the structure of my work in TouchDesigner (see Figure 24 and 25). Through manipulating prompts, the visual change from bustling city streets to serene countryside scenes in sequence, as if it were dreaming. I then layered the output with a particle system that reveals the full image only when viewed from a distance, serving as a metaphor for how memories sometimes require distance to become clear.

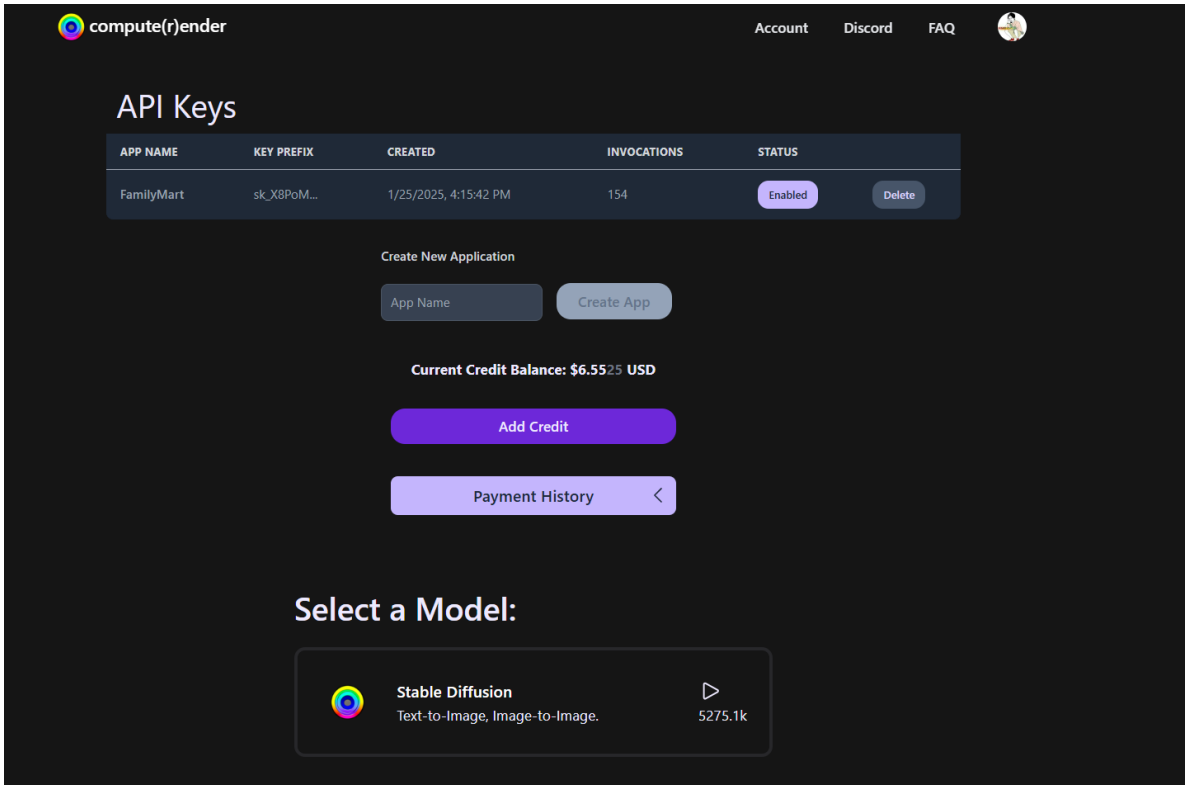

Figure 23. Screenshot by Yu-Chia Pai showing the process of Stable Diffusion API render page, 2025.

Figure 24. Screenshot by Yu-Chia Pai showing stable diffusion generated image (left) based off my acrylic painting (right) through Computerrender API in TouchDesigner, 2025.

Figure 25. Screenshot by Yu-Chia Pai, showing the particle system effects being applied to work in Figure 24, April 2025.

Chapter 9. Thesis Exhibition

9.1. Thesis Exhibition Plan

The overall MFA thesis exhibition plan was designed to create an immersive experience that invites audience to explore my work. The exhibition took place at the Penny Gallery, University of Lethbridge. The floor plan includes several key ideas, such as creating an interactive spatial experience through a circular projection room, setting up video art stations using monitors, a space for projection-based video art, and a partially enclosed projection area. It led to three viewing stations, and three progress plates showcase stations. The layout reflects my thought process in assigning each artwork to a specific station. The conceptual plan for the floor arrangement is described as follows in Figure 26.

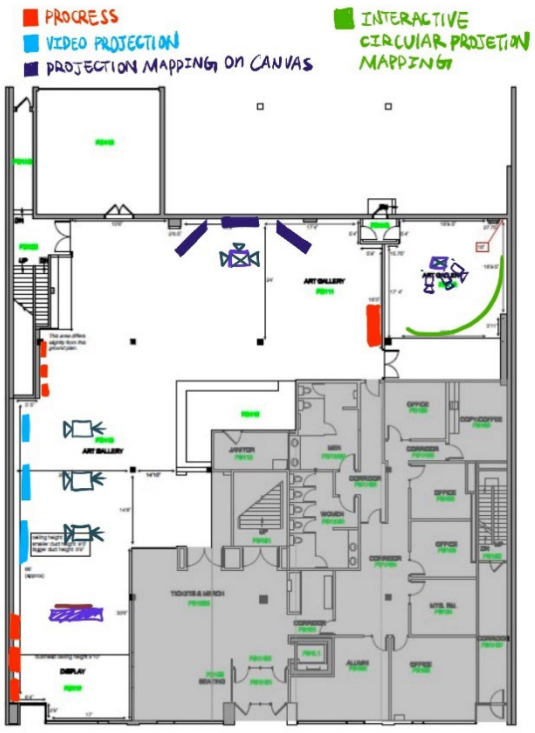

Figure26. Space plan for the MFA Exhibition in the Penny Gallery.

9.2. Preparatory Materials and Experimental Process of the Exhibition

The thesis exhibition design plan consisted of several experiments and adjustments to align visual and audio effects for better presentation during the exhibition. The following passage describes the preparation process and experiments, including the software and hardware used to achieve the intended effects.

The circular projection room was designed to be an interactive and immersive space where spectators could explore my memories by engaging with real-time visual effects through hand movements. To achieve this, I began experimenting on a flat wall, using my room's wall as the testing surface. I used a built-in projection mapping tool called "Kantan Mapper," a visual node that connected to the final output and allowed adjustment of curves and layering modes as needed. I conducted several tests, creating different shapes on the flat surface to improve my mapping skills for the final presentation.

However, I observed that the larger the area intended for projection, the higher the resolution required for ideal image quality. While Kantan Mapper was generally considered an effective tool for 2D projection mapping, I noticed a significant drop in image quality when using it to fit the curved surface of the circular projection room at the Penny Gallery. To address the problem, I switched to using "Stoner," another projection mapping tool within TouchDesigner.

Stoner allowed for more flexible curve adjustments and enabled the division of the output into three segments, which significantly improved the image clarity and resolution. This adjustment ensured that the final output better met the visual standards required for the immersive experience. The results of the final test are shown in Figure 27.

Figure 27. Artist: Yu-Chia Pai. Title: "The Clash — Memory Remapping through Circular Interactive Space." Interactive circular projection. Still images captured from 180-degree circular projection room tests, using a three-projector setup in the circular projection room, Penny Gallery, April 2025.

The projection on canvas is designed to create an experience that explores the interplay between digital and physical elements. The video projection is installed in a space partially enclosed by movable walls to form a half-immersive setup. In terms of projection mapping, it took quite a bit of time to make sure the projection ratio aligned properly with the frames of the acrylic paintings. At first, I had trouble placing the projectors in the right position to get the ideal projection size for the paintings. Eventually, I realized the projection size depends heavily on how far the movable walls are placed. So instead of fully enclosing the space, I angled the two side walls slightly outward to give more room for the projection to fully cover the acrylic painting frames (see Figure 28).

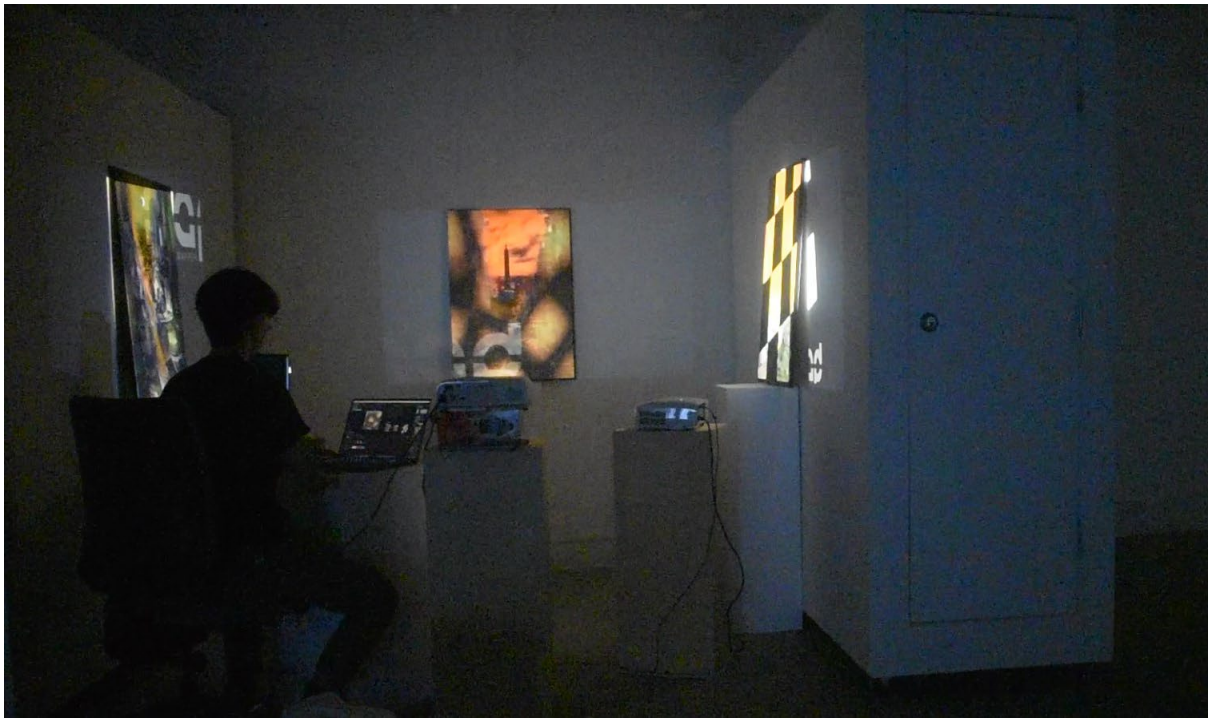

Figure 28. Artist: Yu-Chia Pai. Title: "The Clash — Physical Media and Virtual Space." Projection mapping on canvas. Still images captured from MadMapper projection tests, 3-projector setup in mobile enclosed space, Penny Gallery. April 2025

The projection station for memory exploration was originally meant to be interactive, allowing the audience to explore the visuals through engagement. However, due to hardware limitations, I ended up choosing a more practical approach by pre-rendering the interactive elements. The final setup includes a demonstration video with a side explanation describing how the interactive concept was intended to work (see Figure 29).

The video stations are used to present my video and animation works, as well as to show the progression of my creative process. Each station includes a small info card to help viewers understand the context. These were relatively easy to set up—the only concern was making sure the extension cord was long enough to power all the monitors.

Figure 29. Artist: Yu-Chia Pai. Title: "The Clash — Virtual Discovery of Memory." Projection mapping on wall. Still images captured from MadMapper projection test, 3-projector setup in the standards exhibition space, Penny Gallery. April 2025

Chapter 10. Conclusion

The MFA Thesis project, “The Clash,” is developed from a perspective that combines personal reflection on culture, identity, and memories. At first, the thesis project focused on the cultural connection to me as an individual and how the environment gradually shaped my artistic expression as an approach to present my journey and my life. However, the realization of how technology and AI reconfigured cultural history and artistic expression, leading to different ways to preserve our memories had my attention. Hence, I am contemplating the value of arts between traditional arts and digital media arts by investing in the potential combination that maintains the features of both. Meanwhile, interaction and audience engagement are considered effective media for understanding and comprehending the conceptualization of “transient” and “permanent” in media, which also can be referred to as long-term memory and short-term memory. On the other hand, traditional media brought the juxtaposition of “tangibility” to the table compared to “intangibility” in digital media. My thesis project *The Clash* helped me understand how different mediums carry different emotional weights. Painting gave me something solid to hold onto, while projection and interactivity added layers of movement and openness. That contrast became the core of the project, showing how memory can feel permanent and fragile at the same time.

In today’s fast-changing digital era, where analogue forms are often seen as outdated, my MFA thesis project attempts to bridge the two worlds. It explores how traditional media can be integrated with interactive immersive installations, functioning as a meaningful language to express memory and culture. In addition, the rapid development of AI tools can assist artists to execute their ideas in an effective and creative way. In my work, AI helps me to showcase the idea of how AI can reconstruct our memory by manipulating prompts and input of artwork. All tools and techniques that I applied in my work contributed to a broader conversation on how digital art can evolve beyond the screen and into physical spaces that

feel alive, reflective, and deeply human. Most importantly, I leave a space for the audience to decide their own interpretation of “Memory” and what it consists of.

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Appendix1: MFA Exhibition - Preparatory Material

This appendix provides visual documentation of the material prepared for the MFA thesis exhibition. This includes:

- Still images captured from the video series prepared for the MFA Graduation Exhibition.
- Photos from the 180-projection experiments in the Circular Projection Room, Penny Gallery.

Plate 1. Artist: Yu-Chia Pai "The Clash — Exploration in Digital World" Still images captured from the video prepared of Exploration in Digital World for the MFA Graduation Exhibition, 2025.

Plate 2. Artist: Yu-Chia Pai "The Clash — Exploration in Digital World." Still images captured from the video prepared of Exploration in Digital World for the MFA Graduation Exhibition, 2025

Plate 3. Artist: Yu-Chia Pai Titled: "The Clash — Exploration in Digital World." Still images captured from the video rendered output of Exploration in Digital World prepared for the MFA Graduation Exhibition, 2025.

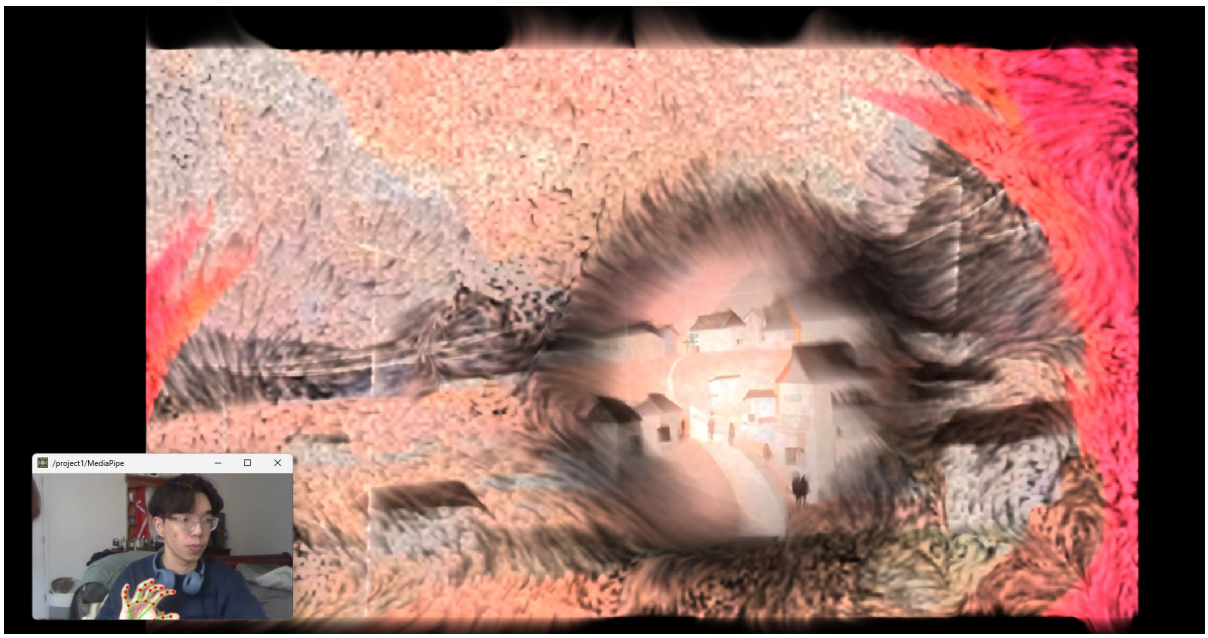

Plate 4. Artist: Yu-Chia Pai "The Clash — Virtual Rediscovery of Memory." Still images captured from the video of Virtual Rediscovery of Memory prepared for the MFA Graduation Exhibition, 2025.

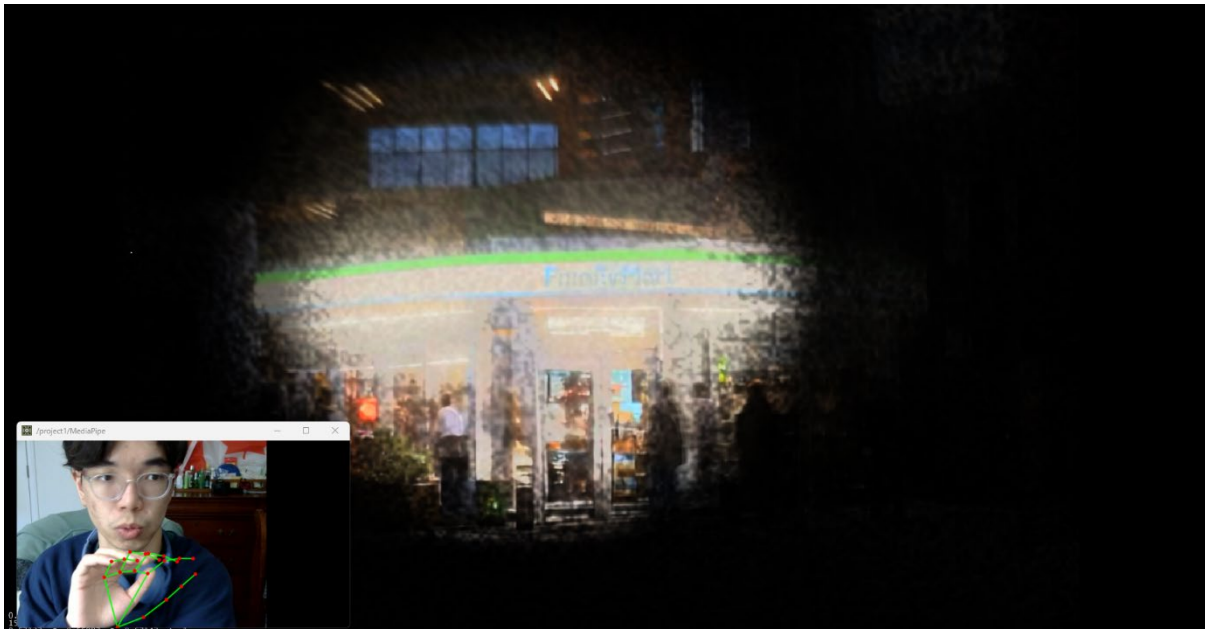

Plate 5. Artist: Yu-Chia Pai "The Clash — Virtual Rediscovery of Memory." Still images captured from the video of Virtual Rediscovery of Memory prepared for the MFA Graduation Exhibition, 2025.

Plate 6. Artist: Yu-Chia Pai "The Clash — Exploration in Digital World." Still images captured from the video prepared of Exploration in Digital World for the MFA Graduation Exhibition, 2025.

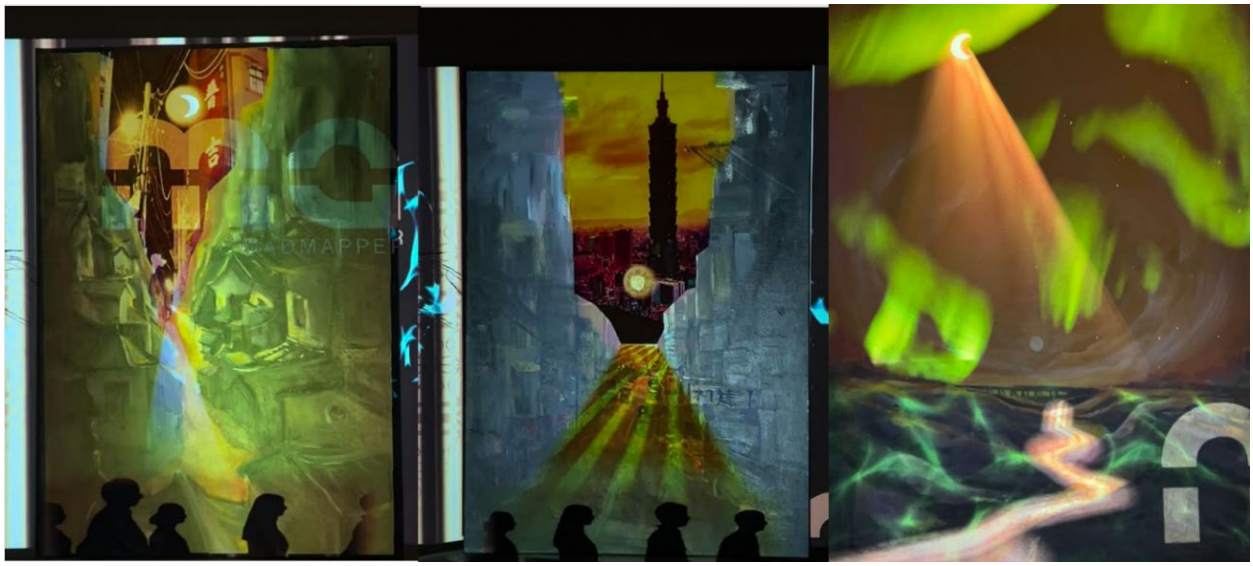

Plate 7. Artist: Yu-Chia Pai "The Clash — Physical Media and Virtual Spaces." Still images captured from the video prepared of Physical Media and Virtual Spaces for the MFA Graduation Exhibition, 2025.

Appendix2: MFA Live Exhibition Documentation

This appendix presents the visual documentation of the MFA exhibition. It includes a series of photographs capturing the five subjects of my thesis, each displayed as an individual station within the exhibition space.

The interactive component is documented through images and video taken inside the circular projection room, which was configured with a webcam to capture audience hand gestures and movements in real time.

Additional documentation includes photographs and video recordings of the 180-degree projection installed in the Circular Projection Room at Penny Gallery.

A full exhibition walk-through video is also included and will be submitted alongside the thesis.

Plate 8. Artist: Yu-Chia Pai. Title: The Clash — Exploring in Digital World. It presents the documentation work in progress. July 2025.

Plate 9. Artist: Yu-Chia Pai. Title: The Clash — Memory Machine. July 2025. The three scenes present interactive video works based on my acrylic paintings, exploring the fluidity, personal specificity, and transitions of memory. July 2025.

Plate 10. It presents a triptych of my digital illustrations combined with interactivity to explore memories of the FamilyMart near my home in Taiwan, as well as imagery of the places where I grew up and cultural representations reflecting my relationship with my heritage.

Plate 11. Artist: Yu-Chia Pai. Title: The Clash — Tangible and Intangible. It presents a triptych of acrylic paintings—Changhua City, Chiayi City, and Lethbridge City—onto which videos of each place are projected, merging tactile brushstrokes with moving images to revisit and reanimate personal memories from different stages of my life. July 2025.

Plate 12. Artist: Yu-Chia Pai. Title: The Clash — The Behind the Screen. It presents a video documenting the experimental process of my thesis project, showing the techniques, I employed in developing the work through its various stages. July 2025

Plate 13. Artist: Yu-Chia Pai. Title: The Clash — The Behind the Screen. It presents a video documenting the experimental process of my thesis project, showing the techniques, I employed in developing the work through its various stages. July 2025.

Appendix 3: Credits

The primary development of the thesis project was carried out by Yu-Chia Pai, with certain external resources incorporated into the work. Full credits for all contributions are listed in the following section.

The thesis content developed by Yu-Chia Pai includes:

- Research: literature review, library research, online research.
- Animation design.
- Motion graphic development.
- Visual narrative development.
- Visual design.
- Virtual compositing.
- Digital image manipulation.
- Digital photo manipulation.
- Video post processing.
- Video recording.
- Video editing.
- Visual effects for narrative.
- 2D animation.
- 3D animation.
- 3D scene design and development.
- Integration of external resources (see credits below) into the thesis project.
- Sounds effects design and manipulation.
- Interaction design and development with the Processing programming language.
- Projection mapping design with MadMapper.
- Interactive installation with Touch Designer.
- Exhibition planning and execution.

The following is a list of credits for third-party resources incorporated into the thesis project.

- 3D Street Light – Simes, Syncronia, Personal and Commercial Use, https://www.syncronia.com/en/3d-bim-cad-models-poles/simes/ikonic
- A Flock of Swallows Flying Freely – Adobe Stock (Fotolia), Standard License (Purchased), https://stock.adobe.com/tw/video/a-flock-of-swallows-flying-freely-a-group-of-birds-made-in-3d/393590274
- AC Model – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+AC+order:_score+availability:free
- Apartment Model – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+apartment+order:_score+availability:free
- Bat Noises Constant Chittering – Adobe Stock, Audio File, Personal and Commercial Use (Purchased), https://stock.adobe.com
- Brick Apartment – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+brick+apartment%20+order:_score+availability:free
- Building Models – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+building++order:_score+availability:free
- Business People Silhouette Crowd Walking – Adobe Stock (Fotolia), Standard License (Purchased), https://stock.adobe.com/tw/video/business-people-silhouette-crowd-walking-green-screen-chromakey/304690211
- Greenery Models – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+greenery++order:_score+availability:free
- Image to Video (Gen-2) – Runway, Personal and Commercial Use, https://runwayml.com
- In Meditation, *Meditation Ambient Pack* – Adobe Stock, Audio File, Personal and Commercial Use (Purchased), https://stock.adobe.com

- Lamp – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+lamp+order:_score+availability:free
- Northern Lights in the Arctic – Adobe Stock, Standard License (Purchased), https://stock.adobe.com/tw/video/northern-lights-in-the-arctic/77917007
- Ocean Surf 01 – Adobe Stock, Audio File, Personal and Commercial Use (Purchased), https://stock.adobe.com
- People Walking – Adobe Stock (Fotolia), Standard License (Purchased), https://v.ftcdn.net/03/26/99/05/240_F_326990518_E243eisX25g8ZiL9wW3g1GRQ9sr8dpli_ST.mp4
- Poster Models – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+poster++order:_score+availability:free
- Social Media Like Icon – Shutterstock, Personal Use Only, https://www.shutterstock.com/zh/image-vector/social-media-like-icon-vector-instagram-1414269332
- Static Whoosh Thick Heavy 01 – Adobe Stock, Audio File, Personal and Commercial Use (Purchased), https://stock.adobe.com
- Street Objects – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+street++order:_score+availability:free
- Stylus Surface Noise 01 – Adobe Stock, Audio File, Personal and Commercial Use (Purchased),

  https://stock.adobe.com
- SUBMERGED – Adobe Stock, Audio File, Personal and Commercial Use (Purchased), https://stock.adobe.com
- Supermarket Fridge – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+supermarket+%20fridge%20+order:_score
- Supermarket Shelf – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+supermarket+%20shelf%20+order:_score

- Taipei's City Skyline at Sunset with the Famous Taipei 101 – Adobe Stock, Standard License (Purchased), https://stock.adobe.com/tw/video/taipei-s-city-skyline-at-sunset-with-the-famous-taipei-101/246205118

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- Trash Bin – BlenderKit, Personal and Commercial Use, https://www.blenderkit.com/asset-gallery?query=category_subtree:model+trash+bin%20+order:_score+availability:free

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