

My Wish



a Kim Hak Soon Animated Documentary

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We must keep this in mind.
We must record these things that were forced upon us.
The same atrocities must not be repeated in the future.

- *Kim Hak Soon*

Abstract

This research project focuses on Kim Hak Soon, a survivor of the Korean Comfort Women system during World War II, aiming to raise awareness about the sexual exploitation enforced by the Japanese military from 1932 to 1945. Using Unreal Engine to create a documentary animation, the project brings Kim Hak Soon's story to life, highlighting her bravery and resilience amid unimaginable suffering. Performance capture technology will be used to record facial and body movements, which will be transferred into an Unreal Engine Metahuman and refined in Sequencer to ensure emotional depth in facial expressions and body language. This human-centered portrayal offers a powerful and immersive way to communicate the painful history of Comfort Women. The project targets the former Imperial Japanese government—as well as survivors of sexual trafficking and exploitation, aiming to amplify Kim Hak Soon's testimony in the continued fight for justice, as reparations and formal apologies remain unresolved. By honoring Kim Hak Soon's legacy as the first survivor to publicly speak out, the project also gives voice to other survivors, fostering awareness, advocacy, and hope while urging ongoing efforts for justice and reparations.

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Introduction

This project investigates how digital doubles, created through performance capture and photogrammetry, can be used to convey emotionally resonant and ethically responsible representations of historical figures—specifically focusing on the story of Kim Hak Soon, a former “comfort woman.”

The term "comfort women" refers to the women and girls who were forced into sexual slavery by the Imperial Japanese Army between 1932 and 1945, primarily in occupied territories across Asia, including Korea, China, and the Philippines. These women were often deceived, coerced, or abducted and taken to military-run brothels, where they endured brutal treatment and sexual exploitation.

Figure 1.1

To bring my vision to life, I used performance capture and



photogrammetry to create a digital double of Kim Hak Soon, a former “comfort woman” and a central figure in my narrative. Performance capture is a technology that records an actor’s facial expressions and body movements to animate a digital character, while photogrammetry involves creating 3D models

from photographs—allowing me to scan and replicate the statue of Kim Hak Soon with precision. I then imported this model into Unreal Engine as a MetaHuman, a high-fidelity digital human framework, because it offered the realism and emotional nuance necessary to honor her legacy. I chose to perform the digital double myself, both as a personal act of empathy and as a

way to embody her story from the inside out. To represent her older voice, I recorded my own voice and then manipulated the pitch, tone, and cadence to reflect the weariness and resilience of an elderly woman recounting traumatic memories. Symbolism played a critical role in the narrative: the butterfly, often associated with transformation and remembrance in Korean “comfort women” culture, represented both Kim Hak Soon’s enduring spirit and the collective memory of the victims. The red ocean symbolized violence, sacrifice, and unresolved pain—a haunting backdrop that underscored the emotional weight of the story. These design and narrative choices were made intentionally to bridge the personal and historical, blending technology with memory in a respectful and impactful way.



Figure 1.2

Project Statement

The goal was to tell Kim Hak Soon's story in a documentary format using real-time animation, bringing her to life through performance capture and MetaHuman technology. Real-time animation allowed for dynamic adjustments to the digital representation, creating a more streamlined and immersive experience. These techniques raise core questions guiding the thesis:

- How can digital doubles created through performance capture and photogrammetry serve as tools for emotionally resonant and ethically responsible representations of historical figures?
- How can real-time animation enhance the authenticity and emotional engagement of documentary-style storytelling in immersive media?
- How can digital doubles mediate cultural heritage narratives in virtual reenactments of historical trauma?

By embodying the MetaHuman myself through performance capture, the project explores how digital doubles can mediate cultural heritage narratives in virtual reenactments of historical trauma. The project further examines how real-time animation enhances the authenticity and emotional engagement of documentary-style storytelling in immersive media. Using MetaHuman technology and Unreal Engine, I recreated Kim Hak Soon's image from a photogrammetry scan of her statue, then used performance capture, manipulating my own voice to represent her older self. Symbolic visual elements, including the butterfly and the red ocean, were employed to evoke themes of resilience, transformation, and unresolved trauma. These choices reflect a larger inquiry into how emerging digital tools, such as real-time animation, can deepen our connection to marginalized histories and expand the language of remembrance through immersive storytelling.

Target Audience:

The target audience includes media designers, animators, and creative technologists who are interested in applying real-time technologies—such as real-time game engines like Unreal Engine, photogrammetry, performance capture, and MetaHuman systems—to the preservation and reinterpretation of cultural heritage narratives. This work is especially relevant to

practitioners and researchers exploring the emotional and ethical dimensions of digital storytelling, particularly when engaging with histories of trauma, memory, and marginalized voices. By showcasing a practical and conceptual approach to using immersive media for historical representation, this thesis aims to contribute to a growing field of creators who are not only technically proficient but also critically engaged with the cultural and human implications of their work. It speaks to those looking to expand the narrative potential of real time tools beyond entertainment, using them instead as platforms for remembrance, empathy and educational impact.

Historical and Contemporary Context

In the years leading up to World War II, Korea had been colonized and controlled by the Imperial Japanese empire for 31 years. Japan ran the government, seized land, banned Korean language, and restricted Korean names. The Imperial Japanese Army spread throughout more than 18 countries in Asia.

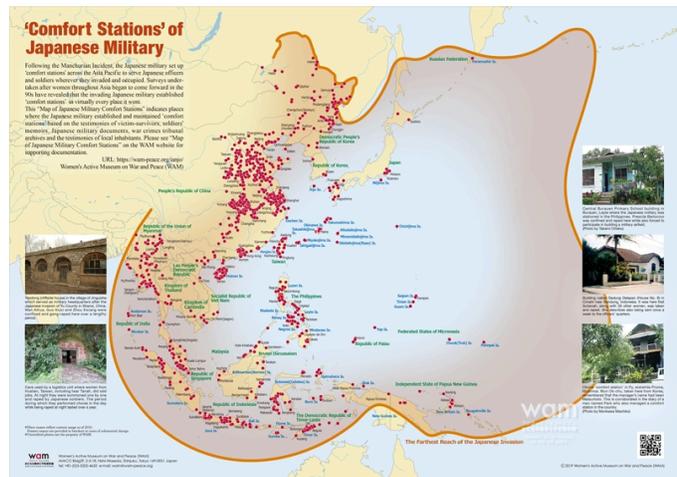


Figure 2.1

Due to the previous chaotic nature of their past history, it shows how the past of Korea and Japan has affected their relationship today. After World War II, Japanese officials burned records of wartime policies, including the "Comfort Women" system. Historians estimate 200,000 and more victims were pressured, abducted, or defrauded into the government run sex slavery system.

Figure 2.2



Women were confined in remote foreign territories under brutal conditions and forced to have sex with as many as 40 soldiers a day. The women suffered severely from physical and psychological abuse, unwanted pregnancies, and forced abortion. Those who tried to escape were mercilessly killed in front of other women as a warning to them. Toward the end of the war, the Japanese military not only destroyed official records but also carried out massacres of “comfort women” in an attempt to conceal their crimes. Only a small number of women survived these atrocities. Some were discovered by Allied forces and repatriated, while others, burdened by deep shame and trauma, chose to remain in the places where they had been abandoned, never returning to their homelands.

Figure 2.3

Kim Hak Soon was the first woman in Korea to come forward publicly and testify her experience as a comfort woman for the Japanese military on August 14, 1991. At the age of 16, she was taken from her home and forced into a military brothel in China, where she endured brutal treatment and exploitation. For many years after the war, she remained silent about her



experiences, which was common among survivors due to stigma, shame, and fear of retribution. Yet, her courage led other survivors to come out and voice their experience.

Due to Kim Hak Soon's resilience and courage she has left a legacy behind for other survivors to follow. Additionally, Kim Hak Soon's impact as a trailblazer in regards to demanding reparations from the Japanese government.

Theoretical Framework

The Wounded Storyteller by Arthur W. Frank (1995) explores how individuals articulate their experiences of illness and trauma through storytelling. Frank argues that personal narratives can be a powerful tool for healing, as it allows individuals to make sense of their suffering and connect with others. Frank explores three types of illness narratives (restitution, chaos, and quest) and emphasizes the importance of storytelling in the healing process. Frank also discusses the role of the storyteller as an active participant who, despite suffering, exercises agency through the act of narrating their experience.

Restitution Narrative: This is the most conventional type of illness narrative, where the storyteller describes their illness as something that can be "fixed" or healed, often with the help of medical treatment. It is framed as a journey from illness back to health.

Chaos Narrative: This type of narrative reflects the ongoing, overwhelming, and uncontrollable nature of illness or suffering. In chaos narratives, the storyteller often feels powerless, and the story can be fragmented and difficult to follow. The chaos narrative is more about expressing the confusion and pain of the experience rather than finding meaning or resolution.

Quest Narrative: A quest narrative involves a journey through suffering that ultimately leads to personal transformation or growth. In this type of story, illness or trauma is framed as a challenge that can bring wisdom, deeper understanding, or a new sense of purpose.

Frank emphasizes that storytelling not only helps individuals process their trauma but also fosters empathy and understanding in listeners. By sharing their stories, people can reclaim agency over their experiences and contribute to broader conversations about illness and recovery.

Trauma Theory

According to Balaev the concept of trauma is viewed as a deeply disruptive experience that affects one's emotional state and perception of the world. Trauma studies investigates its impact on literature and society, focusing on its psychological, rhetorical, and cultural significance. Balaev explores how psychological and social factors influence an individual's understanding of trauma and how these experiences are both shaped by and shape language.

Additionally, trauma is an event that disrupts identity and cannot be fully integrated into memory or narrative. Fragmentation and dissociation are seen as the core causes of trauma, leading to the concept of transhistorical trauma, which links individual and collective traumatic experiences through their universal impact on consciousness and memory. The intense fear caused by trauma prevents the mind from fully processing or verbalizing the experience, making it difficult to assign meaning or value to it. (Balaev, 2018)

For this project, Trauma Theory will be used to analyze the long-term psychological effects of the comfort women experience on survivors. It emphasizes the importance of survivor narratives in understanding trauma and the challenges of articulating these experiences in a

society that often marginalizes victims. including issues related to stigma, shame, and the struggle for recognition. (Balaev, 2018)

Human Rights Theory

Human rights are standards designed to protect individuals from severe abuses in political, legal, and social contexts. They include fundamental rights such as freedom of religion, the right to a fair trial, protection from torture, and the right to education. The philosophy of human rights examines key questions about the existence and nature of these rights, their universality, their justification, and their legal status. (Nickel & Etinson, 2003)

Feminists argue that traditional human rights frameworks have often ignored issues unique to women, such as domestic violence, reproductive rights, and sex trafficking. These concerns were not addressed in early human rights documents. As a result, there has been a push to expand human rights lists to better address the specific abuses women face, as emphasized by scholars like Bunch (2006) and Okin (1998).

Miranda Alison examines wartime sexual violence as a recurring human rights abuse, arguing for a more nuanced theoretical framework. The article discusses the need to consider the complexities of masculinity and ethnicity in understanding these issues. While women and girls are primarily victims and men and boys are often seen as perpetrators, the article stresses the importance of acknowledging male victims and female perpetrators. This duality challenges the traditional male-female victim-perpetrator paradigm, which can limit effective responses. The authors call on feminist human rights theorists and activists to address these complexities for a more inclusive approach to tackling wartime sexual violence. (Alison, 2007)

Human rights theory and trauma theory intersect in their shared concern for human dignity and the protection of individuals from harm. Human rights theory emphasizes the fundamental rights and freedoms that every person is entitled to, such as the right to life, liberty, and security, and aims to prevent violations like torture, discrimination, and exploitation. Trauma theory, on the other hand, focuses on the psychological and emotional impact of severe experiences, particularly those that disrupt an individual's sense of self and worldview, such as abuse, violence, or displacement. When combined, these two frameworks offer a holistic understanding of how human rights violations not only infringe on legal or civil entitlements but also leave lasting emotional and psychological scars. This intersection highlights the importance of addressing both the immediate protection of rights and the long-term healing process for victims of trauma, emphasizing the need for restorative justice and recognition of the enduring effects of violations on individuals and communities.

Technology and Process Documentation

Pre-Production

Photographs of Monuments and Memorial Statues for Scans:



Figure 4.1



Figure 4.2



Figure 4.3

Peace Girl Monument Statue- Brookhaven, Georgia

The Peace Girl Monument was the first memorial site I visited in connection with this project. At the end of our second semester, as we began preparing for our Advancement presentations, we were asked to propose potential ideas for our thesis topics. After much reflection, I decided to center my thesis around the history and legacy of Korean comfort women. Given the limited time before the presentation deadline, I discovered that this particular memorial was the closest one I could realistically travel to. Upon arriving at the site, I paid my respects and began scanning the statue using video footage to document it for future use. Being present at the memorial site stirred a complex mix of emotions—anger, urgency, and a deep need for justice. Yet, I also felt a sense of relief, knowing that I was finally taking meaningful steps toward raising awareness. As an undergraduate student at the University of North Carolina at

Greensboro, I remember first learning about the atrocities committed against “comfort women” and feeling frustrated by my inability to act. I made a quiet promise to myself that one day, when the opportunity arose, I would do something. At the time, I didn’t yet know what form that action would take—but I knew it would matter. Now, having contributed in a tangible and meaningful way through this project, I’m proud to say I’ve fulfilled that promise.



Figure 4.4



Figure 4.5



Figure 4.6

Kim Hak Soon Memorial Statue- San Francisco, California

During my preliminary research, I discovered that San Francisco is the only city in the United States with a life-size statue of Kim Hak Soon. Recognizing the rarity and importance of this resource, I knew I had to travel there to capture the necessary reference material. To create Kim Hak Soon’s MetaHuman, I first needed to gather video footage of her head to generate a 3D scan using RealityCapture. I recorded her head from multiple angles in a smooth, circular motion to ensure all facial features, contours, and fine details were accurately captured. This

comprehensive visual data was essential for producing a realistic and faithful digital representation of her likeness.

Storyboard:



Figure 4.7

Initially, I struggled with creating the storyboard, as I had not previously worked on a formal project that required one, nor had I been exposed to a traditional storyboarding framework. My background was more rooted in asset creation than in writing or storytelling, making this a new and challenging area for me. However, through numerous meetings and discussions with my committee members, I received invaluable guidance on how to visually communicate the emotional tone and mood of the narrative. They helped me understand how to use elements such as color, sound and lighting to enhance the impact of each scene. With their

support, I learned how these components work together to amplify the emotional resonance of the visuals, ultimately deepening the viewer's engagement with the story.

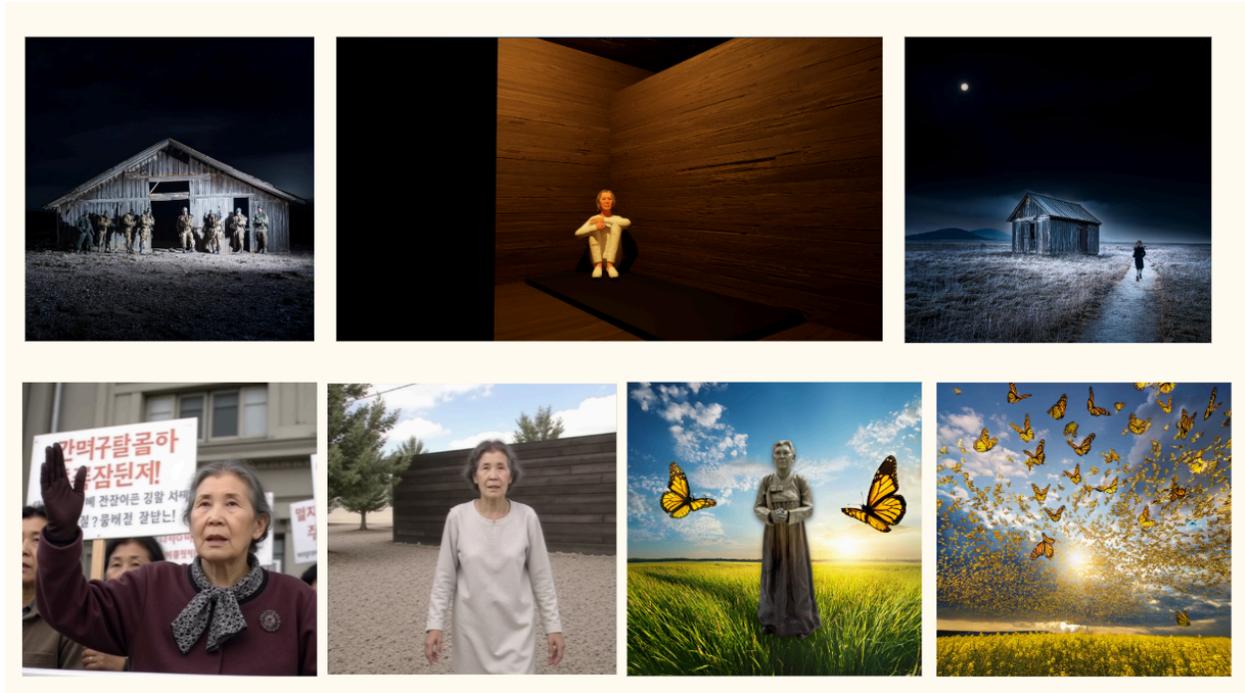


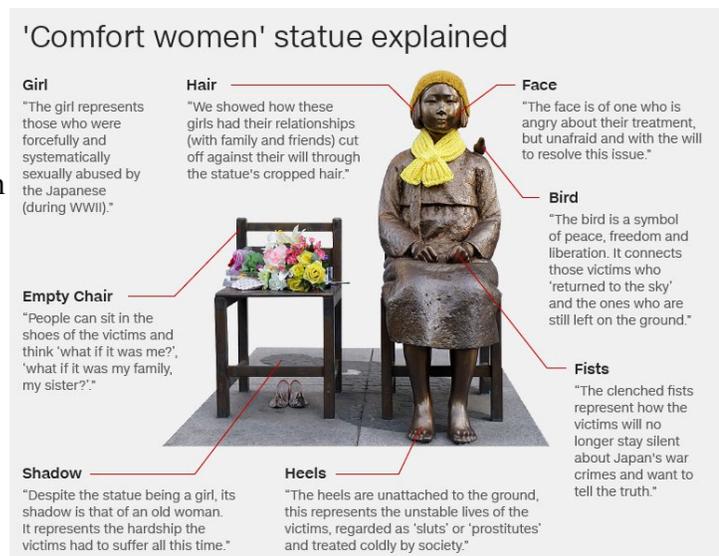
Figure 4.8

Symbolism:

Peace Girl Statue Monument

The inclusion of the Peace Girl Statue in my documentary was an essential decision, as it serves as a powerful symbol of both remembrance and resistance. This statue, which represents

Figure 4.9



the enduring legacy of the "comfort women" survivors, particularly Kim Hak Soon, is an emblem of their courage, strength, and the ongoing fight for justice and recognition. By placing Kim Hak Soon's MetaHuman next to the statue in the final scene, I aimed to create a visual connection between her personal story and the broader movement for reparations and accountability. The Peace Girl Statue stands as a tribute to the survivors, and its presence in the documentary not only honors their suffering but also underscores the importance of raising awareness about this dark chapter in history. It serves as a reminder that, even in death, the fight for justice continues, and the survivors' voices, represented through monuments like the Peace Girl Statue, will never be silenced. By incorporating this statue into the narrative, I hoped to convey a sense of hope, resilience, and the ongoing struggle for truth and reconciliation, while offering viewers a lasting image of solidarity and remembrance.

The Butterfly

Figure 4.10



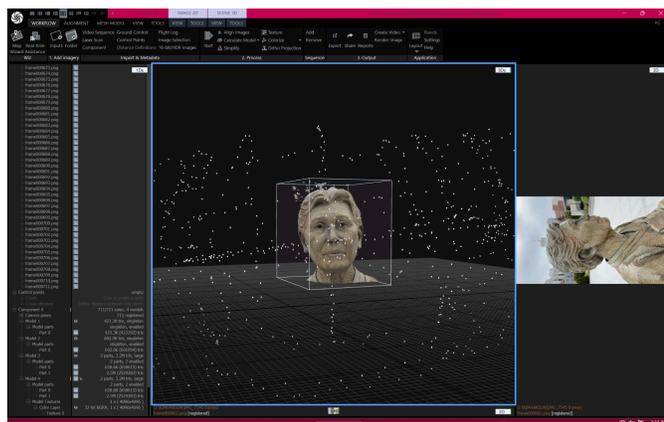
During my research, I discovered that butterflies are frequently used as a powerful and evocative symbol to represent the survivors of the Comfort Women system. The butterfly, with its delicate wings and transformative lifecycle, holds profound significance. It symbolizes not only freedom but also resilience, transformation, and the renewal of life—an appropriate metaphor for the survivors who, despite enduring horrific trauma, found ways to survive, heal, and continue their fight for

justice. The butterfly also represents peace, a desired end to the pain and suffering that these women experienced. This symbolism resonates deeply, serving as a poignant reminder of their strength, dignity, and the enduring hope that their voices will be heard and their stories acknowledged. The image of the butterfly, then, becomes more than just a visual element; it serves as a narrative thread throughout my project, helping to reinforce the emotional weight of the story while also connecting to the larger historical context of survival, healing, and the quest for justice. This butterfly motif guided several creative decisions in my work, from the design of certain scenes to the use of color and imagery, allowing me to subtly layer additional meaning into the visuals. By incorporating the butterfly's symbolism, I aimed to convey a message of both remembrance and hope, showing that, like the butterfly emerging from its cocoon, the survivors of the Comfort Women system possess an extraordinary strength that persists, even in the face of unimaginable suffering.

Production:

Figure 4.11

Once I had gotten the footage I needed from Kim Hak Soon's memorial statue. I used photogrammetry in Reality Capture to scan a sculpture of Kim Hak Soon's head, and then imported the model to Metahuman Creator to texture and rig a digital puppet that had her unique likeness. Then I added the illusion of life to her



double through motion capture with Noitom Perception Neuron inertial suit, and facial capture with Rokoko Headrig using MetaHuman Animator software. Finally, I processed the animation data in Unreal Engine sequencer to iteratively improve the real-time performance into a final rendering that simulates her talking in Korean into her MetaHuman with symbolic visual effects not possible in the real world.

Kim Hak Soon 3D Head model in Reality Capture

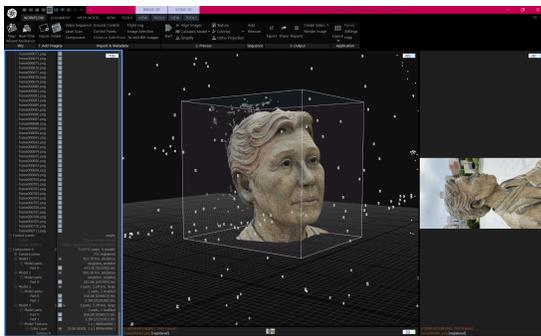


Figure 4.12

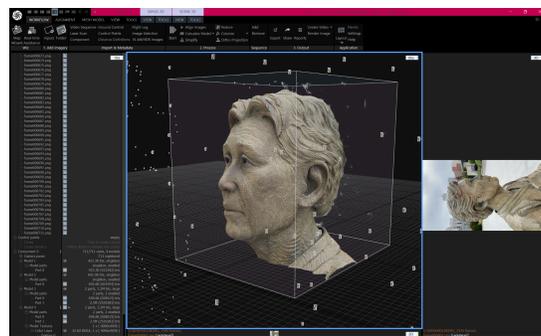


Figure 4.13

Unreal Engine MetaHuman of Kim Hak Soon



Figure 4.14



Figure 4.15



Figure 4.16

Performance capture with MetaHuman provided me with a unique opportunity to embody my interpretation of Kim Hak Soon's experience as a former "comfort woman." It was essential

for me to convey the depth of the emotional pain she endured, capturing not only her physical actions but also the subtle nuances in her facial expressions and the tones in her voice. From the very beginning, I understood that this process would be challenging, as it was important for me to not only physically represent Kim Hak Soon but to evoke the complex emotions tied to her suffering and resilience. During my first test of performance capture, however, I found that the expressions I created were not as expressive or powerful as I had hoped. The initial results felt somewhat restrained, which was disappointing, given the intensity of the emotions I intended to portray. Recognizing the need for improvement, I decided to reshoot the performance capture, making a conscious effort to exaggerate my facial expressions and physical movements to ensure that the emotional weight of the scene would be effectively conveyed. When I applied the second test of the performance capture data to Kim Hak Soon's MetaHuman, the result was much more expressive, though it still didn't quite meet the level of intensity I had envisioned. At that point, I realized that, despite my exaggerated facial expressions, the MetaHuman's digital face did not display them with the same strength that I had intended. This led me to an important realization: in the world of performance capture, especially when working with face capture technology, it's crucial to push expressions even further than what might seem natural in real life. Facial expressions need to be more exaggerated, as the MetaHuman's digital rendering tends to soften them, and subtlety often doesn't translate as strongly on screen. This lesson was invaluable in refining my process, and it greatly improved the emotional expressiveness of Kim Hak Soon's character, making the final result more authentic and powerful.

Environments:



Figure 4.17

For this scene, I aimed to recreate a traditional Korean village to represent the historical setting where the former Imperial Japanese Army abducted young girls and women during the occupation. It was crucial to establish a sense of place that felt both historically accurate and emotionally resonant, as the setting itself carries significant narrative weight. To achieve this, I utilized high-quality 3D model assets from the Unreal Engine FAB Marketplace, carefully selecting those that reflected the architectural styles and rural textures typical of early 20th-century Korean villages. I then strategically arranged these assets to form a cohesive and immersive village layout, paying close attention to spatial composition, scale, and cultural accuracy. Elements such as wooden homes, dirt roads, farming tools, and traditional rooftops were intentionally placed to add authenticity and detail to the environment. This scene serves not only as a backdrop but as a visual anchor that grounds the viewer in the historical reality of the time. By doing so, the environment becomes a silent yet powerful witness to the injustices that

occurred, helping to reinforce the emotional tone of the narrative and offering a deeper connection to the lived experiences of the victims.



Figure 4.18

This scene was deliberately crafted to represent the immense bloodshed inflicted by the former Imperial Japanese Army during the years leading up to and throughout World War II. The water, traditionally depicted in Unreal Engine as a serene sky blue, was intentionally altered to a deep, striking red, transforming it into a powerful visual metaphor. This dramatic color shift was chosen to symbolize the overwhelming loss of life, particularly the victims of the “comfort women” system, who endured unspeakable violence and suffering. The red hue not only evokes the literal bloodshed that occurred but also acts as a visual representation of the deep emotional and psychological scars left on the survivors. By altering the water’s color, I aimed to convey the gravity of the historical events in a visceral, almost immediate way, forcing the viewer to confront the magnitude of the tragedy. The scene is not only a visual choice but a deliberate emotional statement—intended to stir reflection on the enduring impact of violence and the

profound toll it takes on human lives. It was important to me that this stark imagery would resonate with the audience, offering a moment of reflection on the cruelty that occurred during that period and the lasting consequences it continues to have.



Figure - 4.19

For the assault scene, I personally performed the motion capture for Kim Hak Soon's MetaHuman, aiming to deeply convey the intense emotional pain and trauma she likely endured during her time as a former "comfort woman." It was crucial for me to embody her suffering in a way that felt authentic and respectful, channeling her pain without oversimplifying or exploiting the gravity of her experience. In stark contrast, the Imperial Japanese soldier was animated using Mixamo character presets, with specific movements like "drunk walking" and "zombie biting." These unnatural, staggered motions were deliberately chosen to emphasize the dehumanizing and soulless nature of the perpetrator, presenting him not as an individual but as a faceless, monstrous entity. Creating this scene was emotionally challenging and deeply painful for me. I found myself grappling with the responsibility of interpreting such a traumatic event while

striving to maintain the dignity of both Kim Hak Soon's memory and the sensitivity of the audience.

Figure 4.20

Recognizing the delicate nature of the subject matter, I made the conscious decision not to depict explicit acts of violence directly. Instead, I relied on symbolic elements—such as sound, shadows, lighting, and the



atmosphere—to convey the horror and emotional weight of the scene. The use of these elements allowed me to evoke the intensity of what Kim Hak Soon and countless others experienced without sensationalizing their trauma, thus preserving the respectful tone necessary for such a delicate and historically significant portrayal. This approach also enabled me to focus on the emotional and psychological impact of the event, rather than focusing on explicit details, allowing the viewer to fully engage with the deeper layers of pain and injustice represented.

Figure 4.21



The mood I intended to convey for the "comfort station" compounds was one of eeriness, haunting stillness, and deep gloom.

To achieve this atmosphere, I utilized Mixamo character animations to give the

Imperial Japanese soldiers a drunken, swaying motion as they stood in line, waiting their turn. I

deliberately avoided using facial animation, opting instead for dead, expressionless faces to emphasize their inhumanity. This creative choice served as a continuous reminder throughout the documentary that these soldiers were not portrayed as individuals, but as soulless entities embodying systemic cruelty and dehumanization.

Figure 4.22



To create the environment for the “comfort station” buildings, I sourced assets from the Unreal Engine FAB marketplace, selecting models that captured the visual qualities of aged, deteriorated structures. I intentionally chose old, worn shed-like buildings to evoke a sense of eeriness and desolation, aligning with the historical context and emotional weight of the subject matter. These textures and architectural details contributed to an atmosphere that felt unwelcoming and haunting—reinforcing the inhumane conditions in which the “comfort women” were forced to live. The visual choices were designed not only for historical plausibility, but also to evoke an emotional response from the viewer, enhancing the immersive and symbolic aspects of the narrative. This environment became a critical part of the storytelling framework, grounding the digital performance in a space that visually echoed trauma and abandonment.



Figure 4.23

Figure 4.24



Before creating my storyboard or writing the script, I had already envisioned the environment for the ending scene. I knew I wanted

Kim Hak Soon to be placed in an ethereal, "heaven-like" setting, surrounded by an abundance of flowers, with the soft glow of sunset illuminating the scene. She would stand next to the Statue of Peace Girl monument, a symbol of her enduring legacy. My intention was to position her within a serene and peaceful environment, allowing her to rest at last. However, the underlying message of the scene was to highlight her unwavering fighting spirit, even in the afterlife. The goal was to convey that the struggle for justice and reparations continues, despite her physical absence, underscoring that her fight remains alive and relevant in the present day.

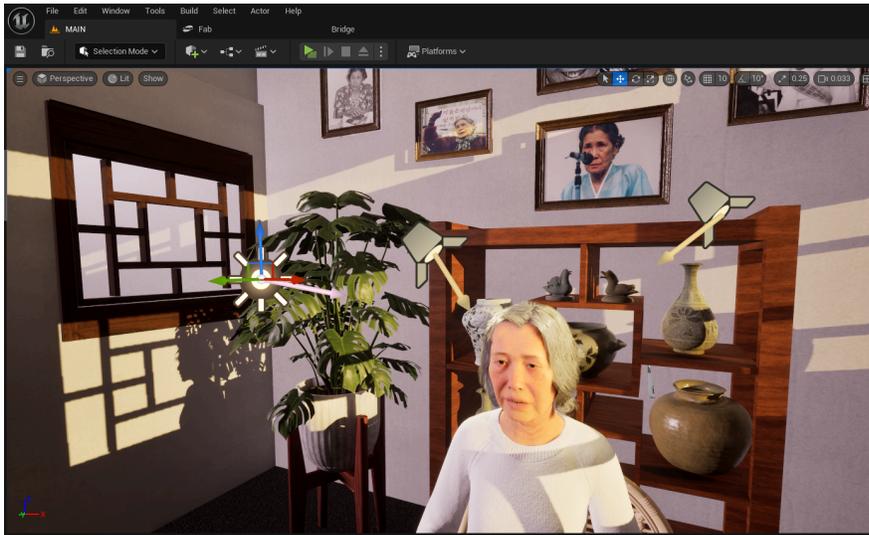
Figure 4.25



Post-Production

Lighting:

Figure 4.26



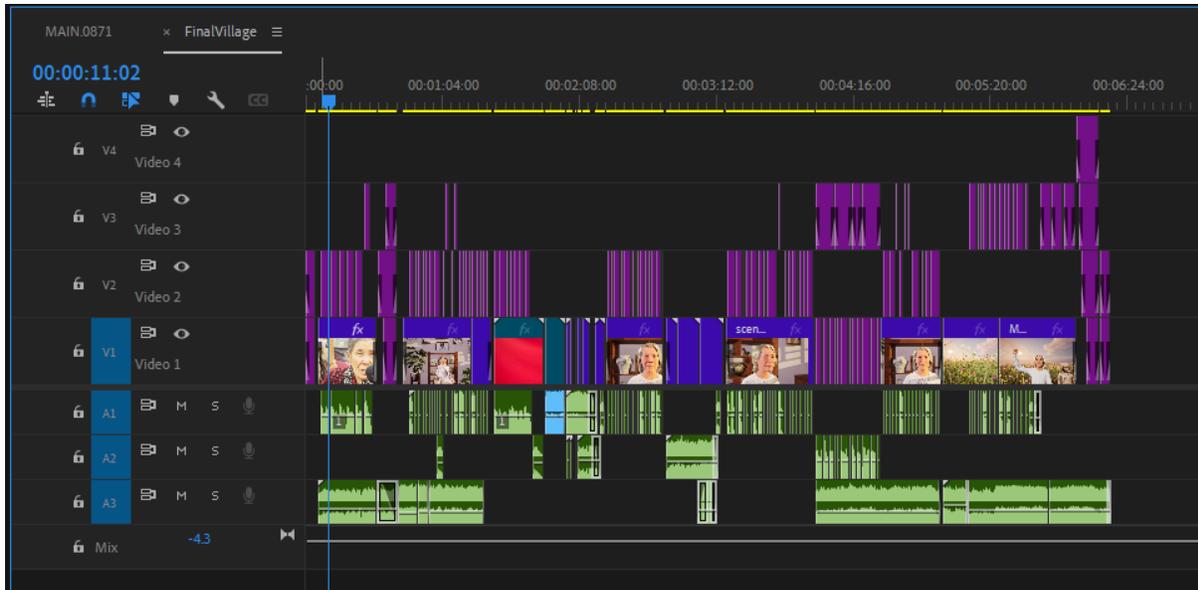
Through the strategic use of three-point lighting and an emphasis on hyperrealism, I was able to challenge the boundaries between the digital and the human. By minimizing the uncanny

valley effect, the MetaHuman became more than just a virtual construct—it became a vessel for emotional connection. This approach not only enhanced visual realism but also deepened the viewer's engagement, bridging the gap between technology and human empathy.



Figure 4.27

Figure 4.28



After rendering the sequence in Unreal Engine’s Sequencer, I imported the resulting .PNG image sequence into Adobe Premiere Pro for post-production. I then created a voice recording of Kim Hak Soon’s dialogue and generated a synthetic AI voice that closely resembled her vocal likeness. By combining this generated voice with my written script, I was able to produce a final audio track in which she appears to speak in her own voice using my words. In Premiere Pro, I carefully synchronized the audio with the rendered visuals of Kim Hak Soon speaking. Additionally, I incorporated original instrumental compositions created in Suno AI to enrich the scene’s emotional tone and further immerse the viewer in the narrative.

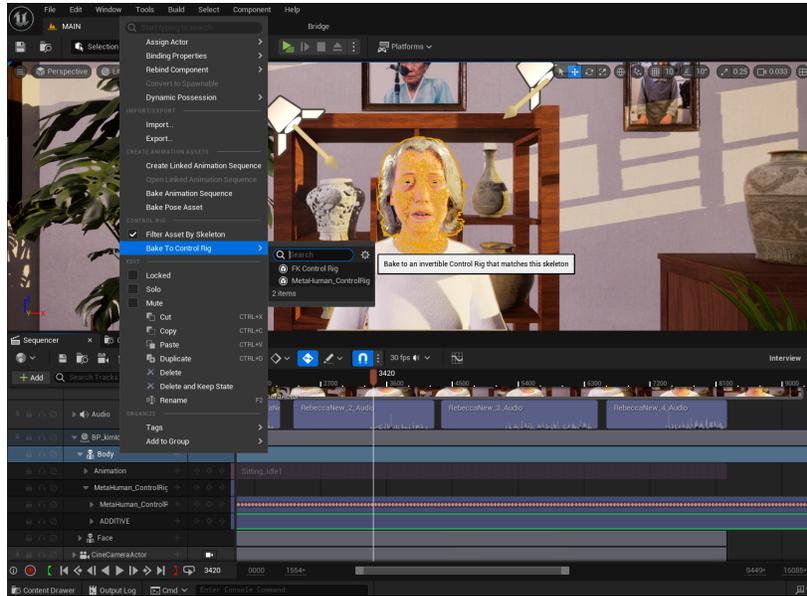


Figure 4.29

To further refine my performance capture data, I utilized the "Bake to Control Rig" feature within Unreal Engine's Sequencer, allowing for detailed hand-keyed adjustments. This approach significantly streamlined the process of editing her movements compared to traditional animation techniques, as the motion capture data provided a foundational layer upon which I could build.

Figure 4.30



In order to streamline the process, I utilized Mixamo character animations, applying them to the soldiers. I then baked the body

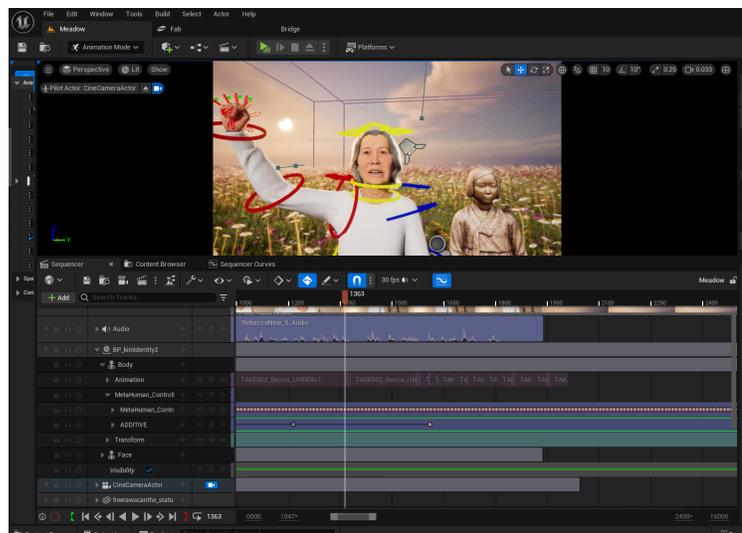
animations to a control rig, allowing for customization of their poses, such as holding a gun, as well as adjustments to their transforms within the additive layer. I made adjustments solely to the soldiers' bodies, as I wanted their faces to remain deliberately unexpressive. The objective was to ensure that the soldiers did not appear overly human-like or exhibit expressive qualities, but instead, conveyed a sense of being soulless and inhuman. As their actions would not have been made by a human but rather a soulless entity.

Figure 4.31



Figure 4.32

I made sure to utilize the additive layer for every scene involving Kim Hak Soon, as it afforded me greater control over her expressiveness and allowed for more nuanced adjustments. This layer proved invaluable in fine-tuning the



subtleties of her facial movements and emotional responses. My primary objective throughout this process was to convey a rich depth of human emotion, capturing the complexity of her character's feelings and ensuring that her reactions felt authentic and relatable to the viewer.

Conclusion

This thesis explores how emerging digital technologies—specifically real-time animation, performance capture, photogrammetry, and MetaHuman creation—can be leveraged to reconstruct and reframe cultural memory through immersive media. The centerpiece of this research is the development of a digital double of Kim Hak Soon, created through a 3D scan of her memorial statue using photogrammetry, and animated using performance capture technology. This process was executed in Unreal Engine, a real-time game engine that allowed for a dynamic, iterative animation pipeline that blurred the line between cinematic realism and interactive design. The use of MetaHuman technology was crucial in achieving the emotional nuance and visual fidelity needed to respectfully embody Kim Hak Soon, transforming raw performance data into a lifelike digital human capable of carrying the emotional weight of a complex historical narrative. By manipulating voice, facial expression, and movement in real time, this project demonstrates how immersive technology can be used not just to replicate history, but to perform it, extend it, and interrogate it within new visual and temporal frameworks.

Rather than treating technology as a passive tool, this project treats it as the central storytelling medium—one that makes it possible to virtually resurrect suppressed histories and render them in forms that are emotionally effective, symbolically layered, and experientially rich. Every stage of production—from scanning monuments and acting out the performance capture, to sequencing

visual symbolism like the red ocean and butterfly—was driven by the affordances of real-time digital tools. These technologies made it possible to explore trauma, resilience, and historical memory through a flexible, iterative creative process that collapses the boundary between filmmaker, performer, and archivist. For media designers, animators, and creative technologists, this thesis offers a model for how real-time pipelines can be used for more than entertainment—how they can serve as engines for cultural heritage storytelling, narrative empathy, and historical reclamation. It demonstrates the potential for immersive digital performance to serve as a powerful conduit for truth-telling, ethical representation, and the continued evolution of documentary form in virtual space.

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