Fusion – Landscape and Beyond: Intersecting Realms of Nature, Urbanity, and Synthetic Memory

Mingyong Cheng, Xuexi Dang, Zetao Yu
University of California San Diego, University of California San Diego, Independent
San Diego (US), San Diego (US), San Diego (US)
m2cheng@ucsd.edu, xdang@ucsd.edu, stevenyu0029@gmail.com

Abstract

The *Fusion: Landscape and Beyond* series explores the nexus of nature, urbanization, and artificial intelligence (AI), reimaging "AI Memory" as a participatory archive, where AI transcends from a mere tool to an integral participant in crafting synthetic memories that resonate with the collective cultural narratives. Beginning with "Synthesis of Time and Terrain (V1)," the series juxtaposes traditional Chinese landscapes against AI's modernity, reflecting on environmental and urban shifts. Utilizing animations and augmented reality generated through advanced self-fine-tuned Stable Diffusion model, it examines the tension between natural beauty and urban expansion. The subsequent phase, "Calligram of Contrast (V2)," introduces an interactive installation merging AI-generated cityscapes with traditional brushworks, invoking a philosophical pursuit of harmony amidst environmental concerns. Through Clip Interrogator technology and infrared tracking sensor, the 2D canvas is transformed into a 3D space that is interactive and intrusive. The finale, "Illuminating Urban Scars (V3)," critically scrutinizes China's halted urban projects, representing the repercussions of unchecked development and human cost. This trilogy highlights AI's ability to fuse historical artistry with contemporary issues, positioning "AI Memory" as a critical medium for cultural discourse and digital heritage.

Keywords

Artificial Intelligence, Cultural Heritage, Digital Heritage, Synthetic Memory, Landscape Aesthetics, Urbanization.

Introduction

Fusion: Landscape and Beyond series embarks on a creative journey through the lens of artificial intelligence (AI), nature, and urbanization, encapsulating the essence of traditional Chinese landscape art within the framework of modern digital technology. *Fusion* consists of three evolving phrases: "Synthesis of Time and Terrain V1 (2022)," "Calligram of Contrast V2 (2023)," and "Illuminating Urban Scars V3 (2024), each comments on the interplay between the digital and physical worlds from a different perspective in cultural forms, humanity and nature, and urban issues. The project is based on the bigger question: what is the role of art in keeping the identity of places that are steeped in human values and tell a story about the "genius of the place"? [1]

The first piece V1 contains a video animation alongside a collection of still images that interrogate the interplay between memory and creativity via AI and Chinese landscape art. The depiction of terrains oscillates between traditional blue-green techniques and the transformed representations of contemporary urban landscapes, probing the contrast between historical vistas and metropolitan jungles by setting cultural depictions of nature against urban imprints. This juxtaposition invites viewers to navigate the liminal space separating the organic from the fabricated.

Advancing to V2, the narrative evolves into an interactive exhibit that merges AI-crafted cityscapes with the finesse of classical landscape craftsmanship, resonating with the Chinese ethos of harmony. This fusion echoes the age-old Chinese pursuit of harmony, employing the traditional brushwork technique that imitates natural texture, now reinterpreted through textural calligrams describing cityscapes. Additionally, it addresses climate change concerns, underscored by simulated infrared imagery, as the imperceptibility of human infringement on the natural world reminds of the living habitants in an artificial nature-city [2].

Concluding with V3, the series delivers into the poignant reality of China's incomplete urban projects – the tangible remnants of rapid economic expansion. This final act critiques the physical landscape of halted constructions and symbolizes the resilience of human aspiration amidst the ruins of progress.

Concept & Theory

Fusion conceptualizes "AI Memory" as a digital continuum, positioning generative AI as an integral collaborator in the fabrication of synthetic memories that reflect collective cultural and historical narratives. This initiative unveils a compelling interaction between memory and AI, paralleled by contemporary text-to-image generation techniques, which resemble the processes of memory recall and reconstruction, thereby actualizing cultural memory. The notion of Cultural Memory, introduced by Jan Assmann, emphasizes traditions, transmissions, and transference, underscoring cultural idiosyncrasies. It manifests as an abstract institution reliant on mechanisms of conservation and re-embodiment, where Assmann delineates that cultural

memory attains formality and stability through cultural constructs such as texts, rites, monuments, and institutionalized communication, including recitation, practice, and observance [3]. Distinguished from collective memory, which arises from routine interactions and communications, cultural memory serves to consolidate and perpetuate a unified identity across generations [4].

Cultural memory encapsulates individual, cultural, and social facets, influenced by societal transformations and challenges like urbanization, conservation, and emergent media, acting as an ethereal archive that integrates historical, cross-cultural, and theoretical reminiscences, thereby animating images.

Drawing inspiration from the concept of Cultural Memory, which accentuates the selective retrieval and contemporary update of memory in response to changing circumstances or needs, the present AI generative imagery algorithms are posited as analogous to the construction of cultural memory, yielding diverse outcomes based on both pre-existing datasets and current inputs. In this light, *Fusion* reimagines AI memory within the ambit of Chinese landscape aesthetics, a creative paradigm that articulates contrasts, adjacencies, and continuities. *Fusion* reinterprets Chinese nature portrayals as mental expressions, building upon cultural memories transmitted through cultural ideologies, artistic styles, and self-identified values preserved within the AI repository.

Fusion: Landscape and Beyond

V1: Synthesis of Time and Terrain (2022)

Drawing inspiration from the profound connection between the "AI Memory" analogy and its symbolic connection with Chinese landscape painting mentioned in the previous section, our project, "Fusion: Landscape and Beyond V1: Synthesis of Time and Terrain", embarked on an exploratory journey. The catalyst for this exploration was the narrative depth and historical significance of "A Thousand Li of Rivers and Mountains" by Ximeng Wang [5], a masterpiece renowned for its enduring vibrancy. Wang's innovative use of mineral pigments has preserved the painting's blue-and-green palette through centuries, a testament to the enduring beauty of nature as seen during the Song dynasty. However, juxtaposing this with the current environmental challenges, including climate change and the anthropogenic transformation of natural landscapes into urban sprawls, reveals a stark contrast. The once-unfading beauty portrayed in Wang's work now contends with the encroachment of skyscrapers and the fragmentation of natural vistas.

In an era characterized by rapid urbanization and technological advancements, we witness the transformation of verdant jungles into concrete jungles, grappling with deteriorating air quality and the incessant din of urban life. These experiences, etched into our collective memory, highlight a poignant loss — the fading documentation of our changing landscapes. Leveraging the potent capabilities of generative AI, Fusion V1 endeavors to use a myriad of media forms, co-created with AI, to encapsulate our sentiments towards these dramatic shifts and navigate a narrative that intertwines the past, present, and the elusive future.

The preliminary phase of our artistic endeavor involved a meticulous fine-tuning process. We curated a dataset comprising 2,000 elements from Chinese landscape paintings, sourced from the public domain, to refine the capabilities of the Stable Diffusion v1.4 model [6]. Despite the model's comprehensive training on the expansive laion5B dataset, it exhibited limitations in generating diverse and high-quality representations of Chinese landscape art. This fine-tuning process was not merely technical but symbolic, embedding the essence of Chinese landscape artistry into the AI's memory.

Our collaboration with the fine-tuned AI model yielded two distinct sets of artworks. Initially, we harnessed an open-source text-to-image AI animation tool, Deforum [7], alongside our enhanced Stable Diffusion model, to craft an animation titled "The Faded Landscape". This piece mirrors our foundational motivation, symbolizing the historical transition from pristine natural landscapes to the urbanized realities of today, while simultaneously addressing the critical issue of climate change.

Figure 1. Still frames from the animation, *The Faded Landscape (2022)*. ©Mingyong Cheng & Xuexi Dang.

Subsequently, we ventured into creating a series of still images titled "From Landscape to Landscape". This collection delves deeper into the dichotomy between historical and modern landscapes, showcasing the AI's ability to blend traditional aesthetic principles with contemporary urban elements. Firstly, these images use text-to-image technology to depict an unexcited urban space and then utilize image-to-image processing to generate a landscape painting. While the two images share a similar structure, they also exhibit distinct differences in style and subject matter. Next, we print these images on Xuan paper and present them as traditional scrolls. Through this presentation, we juxtapose urban imagery with classical art forms and highlight the imperfections of AI-generated artifacts alongside meticulous compilation techniques. By contrasting these elements, we aim to manifest the concept

of “AI Memory,” offering viewers a reflective journey that spans time and space, inviting them to ponder the evolving relationship between humanity, technology, and the environment.

Figure 2. Photo of *From Landscape to Landscape (2022).* ©Mingyong Cheng & Xuexi Dang.

V2: Calligram of Contrasts (2023)

Building on the profound inquiry initiated by Fusion V1 in 2022, our interactive art installation, “Fusion: Landscape and Beyond V2: Calligram of Contrasts”, also known as “Fusion: Landscape and Beyond 2.0” [8], delves deeper into the exploration of AI as a dynamic repository of cultural memory, set against the backdrop of evolving urban and natural landscapes. This sequel not only inherits the philosophical underpinnings of its predecessor but also introduces an innovative interactive dimension that engages directly with the concept of synthetic memory through the medium of AI-generated art.

At its core, “Fusion: Landscape and Beyond V2” represents an advanced synthesis of technology and traditional Chinese artistry, offering an immersive experience that dynamically responds to human interaction. Inspired by the traditional Chinese brushwork technique 皴 Cun, which imparts texture to natural elements in paintings, we have developed a novel AI model. This model adeptly merges AI's interpretation of urban aesthetics with the nuanced strokes of Chinese landscape painting, creating a fluid depiction of cityscapes and natural environments that span past, present, and future.

Our technological approach employs our self-fine-tuned Stable Diffusion model in the Stable Diffusion WebUI [9] and visual programming tool Touch Designer, enabling the visualization of city and nature imagery within a three-dimensional space. This process begins with the generation of synthetic images of Chinese cities, utilizing text-to-image generation fueled by local APIs for continuous interaction with AI models. Each session starts with the system selecting a Chinese city name at random, which serves as a prompt for generating urban landscapes. These images are then transformed, through image-to-image generation, into representations of artificial nature that embody the aesthetics of traditional Chinese landscapes. The Clip Interrogator algorithm [10] plays a pivotal role in translating these visual creations into AI's interpretation, which is subsequently reimagined as the textural strokes within the landscape, effectively marrying the digital with the classical.

The installation invites viewers to become an integral part of the art itself. As participants move through the exhibit, their presence and motion not only alter the visual landscape before them but also symbolize the human capacity to interact with and influence our surroundings. This interactive aspect is designed to reflect on the imperceptibility of human impact on the natural world, particularly within the confines of an “artificial nature-city.” By incorporating simulated infrared imagery, the installation highlights humanity's excessive intrusion into natural spaces, fostering a deeper consciousness towards ecological balance.

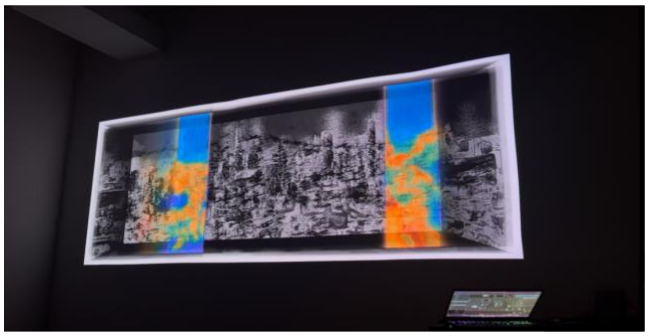

Figure 3. Photo of *Fusion: Landscape and Beyond V2: Calligram of Contrasts (2023)*. ©Mingyong Cheng & Xuexi Dang.

This project transcends conventional artistic boundaries by creating a space where AI memory, human interaction, and ecological contemplation converge. It encourages participants to reflect on their relationship with the environment, bridging the gap between human and nature through a blend of ancient artistry and contemporary technology. As viewers traverse this synthetic landscape, they are not just observing a representation of nature but are also confronted with the profound implications of their presence within it. Through Fusion V2 we offer a vision of coexistence and harmony, urging a collective reevaluation of our role within the natural world. This installation is not merely an artistic endeavor but a call to awareness, inviting us to envision a future where technology, art, and ecological consciousness are interwoven into the fabric of our shared experience.

V3: Illuminating Urban Scars (2024)

In “Illuminating Urban Scars,” the ongoing chapter in the “Fusion: Landscape and Beyond” series, the artwork confronts the dichotomy of resilience against adversity. Amidst the stark backdrop of China's unfinished urban edifices, this interactive installation evokes a contemplative narrative—where the halted progress of construction contrasts with the persistent glow of human aspiration, symbolized by starlight. The viewers' presence animates the installation, transforming the frigid stillness of these structures into a display of thawing warmth, signifying the

melting away of barriers to reveal the enduring tenacity to overcome.

The essence of "AI Memory" is woven seamlessly into this experience, resonating with the idea that our collective cultural experiences and histories—much like these unfinished monuments—are not static but are continuously reconstructed and reinterpreted by the AI. In this sense, the AI does not merely respond to immediate interactions; it serves as a custodian of synthetic memory, encapsulating and projecting the cultural, historical, and personal narratives embedded within the urban landscape. As participants move through the space, their interactions prompt a recollection within the "AI Memory," which then materializes visually, melding past impressions with present engagement to suggest a future of reclaimed potential and aspirations.

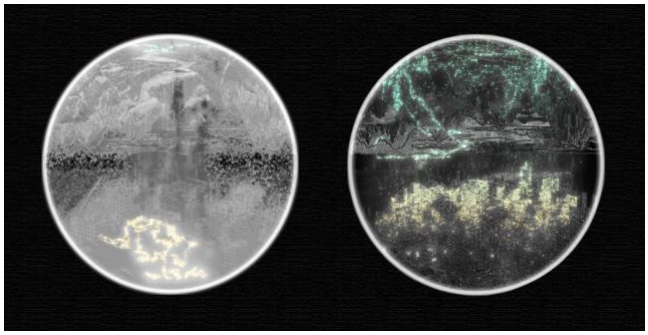

Figure 4. Two still frames from *Fusion: Landscape and Beyond V3: Illuminating Urban Scars* (2023-). ©Mingyong Cheng & Xuexi Dang.

The starlight emerging amid the melting scenes crafted by the AI, and the gentle drift of the Chinese character 家 (home), represent not just a literal warming but also the reawakening of collective memories and hopes. It is a nuanced metaphor for our ability to revive and honor the layered stories of our environments through the evolving lens of AI memory.

"Illuminating Urban Scars" thus transcends its interactive allure, inviting a deeper meditation on the cyclical nature of construction, deconstruction, and reconstruction—in both our physical world and our collective cultural psyche. The piece stands as an embodiment of reflection, challenging the viewer to consider the transformative power of memory—both human and artificial—and its profound impact on our interpretation of space, place, and identity.

Conclusion

The "Fusion: Landscape and Beyond" series culminates as a reflective discourse on the intersection of cultural heritage and technological evolution. This synthesis of art and AI acts as a critical lens through which the complexities of environmental change and urban development are examined and understood. The progression through the series—from "Synthesis of Time and Terrain" to "Calligram of Contrasts," culminating with "Illuminating Urban Scars"—chronicles a journey that invites introspection on the interdependent relationship between nature, urbanity, and human agency.

The role of "AI Memory" in this dialogue extends beyond a mere archival function; it emerges as a dynamic framework capable of capturing and critiquing the collective narrative shaped by these forces. In this context, the series invites the audience to reconsider the contours of memory and identity in the digital era. The landscapes and cityscapes rendered through the prism of AI not only encapsulate visual records of change but also prompt critical engagement with the ways our environments are continuously reconstructed, both physically and in the realm of collective consciousness.

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