iNVENTX 2025 Creative Exhibition

SUSTAIN*AISSANCE*: Emotion . Expression . Identity

Morphology of Kinesis

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Abstract

Morphology of Kinesis is a biophilic, AI-driven, low-energy installation that transforms a living terrarium into real-time projection to ask how digital art can redistribute the emotional benefits of nature. A 360-degree camera streams real-time images of the moss, soil and plants' micro-ecosystem to a diffusion model, which re-renders the scene according to prompts. The expansion transforms a handful of nature into a never-ending forest, revealing hidden bioluminescence and morphing according to the user's interaction with the camera angle. Each iteration multiplies the minimal matter, building upon boundless digital habitats. Aligned with SUSTAINAISSANCE theme, the work frames sustainability as creative regeneration rather than conservation alone. By using lightweight processing, it creates a deep sensorial experience with minimal energy consumption, focusing on revising the possibilities of sustainable eco-aesthetic designs. The aim of the installation is to evoke the sense of eco-nostalgia and propose new, intimate and individual possibilities for collective shaping of healthier futures. The installation functions as a collaborative canvas: audience-generated prompts steer the AI, making spectators co-authors of the growing landscape. In terms of identity, the installation foregrounds our role as custodians who can re-envision nature into shared possibilities.

Keywords Biophilia; AI diffusion; Real-time projection; Organic AI; Morphology
Received: 25 June 2025, **Accepted:** 1 November 2025, **Published:** 30 December 2025

International Journal of Creative Multimedia (2025) 6, Special Issue (SI), 23-29
doi: https://doi.org/10.33093/ijcm.2025.6.SI.3

Published by MMU PRESS. URL: https://journals.mmupress.com/index.php/ijcm

Artist Statement

Concept and Theme

Morphology of Kinesis began with a miniature biome of moss, soil, and suspended humidity, and a reflection on the quiet relief that this micro-tropical forest can offer. Our initial questions focused on amplifying the experience with emerging technologies, with the goal of sharing pure emotion without further material expansion. Our concept was based on the idea of recreating a full-scale forest, with its unpredictability and organization visible only through a deeper understanding of the biome; however, without requiring additional resources, such as water or land. To explore this question, we envisioned a technology-driven, continuously evolving landscape in which living nature, human language, and generative computation merge into one another.

The installation directly addresses the festival theme by allowing visitors to experience the delight of witnessing the symbolic act of growing an endless forest from a handful of moss and miniature plants. Expressively, every text prompt and cursor gesture becomes an act of creation: spectators co-author the imagery in real-time, entering a performative dialogue with the machine and its micro-ecosystem. The work recasts identity as co-creator, positioning each participant as an active shaper of ecological futures.

Sustainability operates both as a method and a message here. The system's lightweight processing keeps energy use to a fraction of that of conventional immersive setups, while the terrarium's compact physical footprint provides an infinite number of digital habitats. By demonstrating how a minimal living fragment can seed boundless virtual environments, our installation proposes creative regeneration as an alternative to resource-heavy representation. It also generates a reflection on how equitable access to the feel of nature might be expanded in the urban environment.

Approach and Process

The artwork is developed using TouchDesigner, a node-based visual programming environment. Live footage captured via an Insta360 camera is mapped onto a spherical mesh within TouchDesigner, allowing for interactive manipulation of the 360-degree video through mouse input. This footage is then visually displaced by integrating layers of randomized noise patterns. Subsequently, the altered footage is processed through Stream Diffusion – an advanced, real-time diffusion pipeline optimized for interactive media generation. Customized diffusion parameters are applied, alongside a text-based prompt designed to guide the transformation of the 360-degree content. The example prompt employed and highlighted in the video is: "tropical forest, green tropical leaves, extreme close-ups on leaves, leaves move slowly, rain, morning sunlight, water drops," which contributes to a vivid, atmospheric reinterpretation of the original visual input.

Our approach was guided by the goal of creating a seamless interplay between live environmental input and generative visual transformation. We began by capturing immersive 360-degree footage using an Insta360 camera and a terrarium, allowing us to ground the work in a real-world, natural setting. This footage served as both the aesthetic and conceptual foundation for the piece. The next stage involved processing the footage in TouchDesigner, where we mapped it onto a sphere mesh to create an enveloping visual space. TouchDesigner's flexibility enabled us to incorporate user interaction through mouse input, adding an experiential layer to the installation. We then applied visual displacement using randomized noise patterns to abstract and destabilize the realism of the footage, encouraging a transition from representation to interpretation. To further explore the tension between reality and imagination, we integrated Stream Diffusion, a real-time diffusion-based generative model. By feeding the displaced footage into this model with a custom prompt, focused on tropical forest elements and natural textures, we were able to manipulate and reimagine the environment through AI, in a way that felt organic and alive. This multimodal process enabled us to integrate computational techniques with natural visual motifs, resulting in an immersive, evolving artwork that engages viewers both technologically and emotionally.

The entire process of creating this artwork was inherently experimental. We initially began with conventional recordings using mobile phones and digital cameras to explore how natural environments could be integrated into our digital workflow. However, as the project evolved, so did our ambition. With the goal of achieving a seamless interplay between live environmental input and generative visual transformation, we transitioned to using immersive 360-degree footage captured with an Insta360 camera - filmed inside a terrarium to preserve intimacy and detail while enhancing spatial depth.

This marked the beginning of a series of layered experiments, both in technique and concept. We worked extensively within TouchDesigner, testing a variety of nodes and processing chains to create abstracted, displaced outputs that still retained a visual connection to the source material. Rather than applying a single visual effect, we explored the procedural generation of movement, distortion, and interaction, manipulating the footage in real time to respond to user input.

What made the process truly innovative was the integration of Stream Diffusion, a novel real-time AI diffusion pipeline, into the TouchDesigner ecosystem. This was a non-standard implementation, where the displaced 360 footage was fed into the generative model using carefully curated prompts. The resulting visuals were not static images, but living, breathing textures that evolved in response to interaction. This approach blurred the boundaries between recorded reality, AI-driven reinterpretation, and live user interaction, making each viewing experience uniquely generative and immersive.

Meaning and Impact

Morphology of Kinesis tells the story of a micro-ecosystem that, through real-time AI and audience engagement, can bloom into an endless digital forest. It asks about the digitally generated feelings and possibilities of the multiplication of our experience of nature through emerging technologies. It also offers a reflection on the nature of language and how we can describe our initial imagery and expectations through a single prompt. Our installation reframes technology as a tool for creative regeneration rather than consumption. It also repositions visitors from passive viewers to co-creators who actively cultivate—and are responsible for—the ecosystems they conjure.

We hope the work sparks a reflection on sensorial immersion that does not require energy and resource-intensive efforts. Instead, we propose that it should be linked to the possibilities of language and individual expression of nature-related nostalgia for pristine environments. The act of growing a rainforest with a prompt and gesture evokes a sense of wonder, reflecting a creative act that empowers the user to express care for nature through a playful interaction with the design. We also call for a reflection on our identities as spectators, blurring the line between the visitor and creator.

Materials and Techniques

The installation features a micro-biome in a terrarium, live 360° footage of the terrarium (captured with an Insta360 camera) with a TouchDesigner pipeline that maps the video to a spherical mesh and layers it with procedural noise displacement responsive to mouse input. The altered stream is then fed into Stream Diffusion, a real-time AI diffusion model guided by text prompts, which continually re-renders the scene as luminous, slow-shifting forest imagery. The tools: miniature ecosystem, physical camera, node-based compositing, generative noise, and diffusion AI, translate an experience of a tiny forest into a boundless, interactive panorama, visually oscillating between documentary detail and dream-like abstraction to feature the work's theme of technologically magnified environmental closeness.

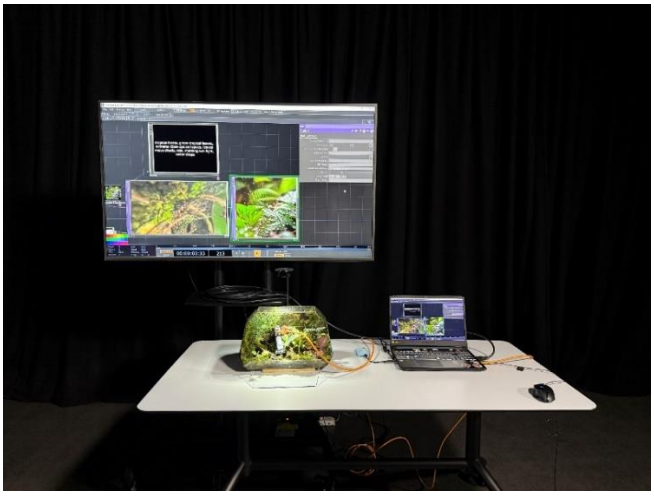

Figure 1. Installation Setup

Figure 2. Terrarium

Figure 3. Generated Forest

Artistic Influences

The project draws on the bio-art lineage of Eduardo Kac (2005), who treats living matter as both medium and message. His works cover entanglements between humans and other organisms, which inspired us to rethink this ethos in the context of connecting a real terrarium with AI-driven augmentation and user interaction. We also refer to biophilic design, understood as a human inclination to seek a connection with nature and, subsequently, a translation of this need into the language of design and creative practice (Kellert, 2008).

Locally, we are immersed in a discourse about sustainability and the development of green cities in the context of Southeast Asia. Vietnam's National Green Growth Strategy and recent policies on low-carbon, resource-efficient development inform our commitment to minimal-energy computation and micro-scale habitats. Conceptually, we are influenced by the post-naturalist philosophies of Steven Vogel,

which reframe nostalgia for pristine environments as an invitation to re-imagine nature within human-shaped worlds. These influences shape our work that merges ecological thinking with digitally created abstraction to discuss mindful futures.

Conclusion

Morphology of Kinesis demonstrates how a fragment of living matter, amplified by real-time diffusion AI and participatory interaction, can evoke biophilic emotion and discuss ecological identity. By merging touch-light processing with an endlessly regenerating forest of words and pixels, the work positions sustainability as a practice of creative regeneration rather than material expansion. Audience discovers that a single prompt can create imaginary digital habitats, inviting reflection on the viewer's agency as co-authors of environmental futures. The installation explores eco-nostalgia and utilizes language as a regenerative design tool, offering insight into the possibilities of emerging technologies and expanded media. The project can be further expanded in terms of presentation on larger displays and the possibilities of linking data streams from threatened biomes to places such as museums, galleries, or even school classrooms, thereby expanding digital education methodologies.

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Acknowledgment

This installation was created with the support of RMIT University in Vietnam.

Funding Information

The creation of this artwork is supported by material and digital resources belonging to RMIT University, Vietnam.

Authors' Bio

Dr. Agnieszka Kiejziewicz – holds a PhD in the Arts and Humanities (with an emphasis on Film and Media) from the Jagiellonian University in Poland; the author of academic publications and monographs. She is the author of over fifty peer-reviewed articles concerning audiovisual art, media art, Asian film, media, culture, digital art, games. For the past few years, she has been working at RMIT Vietnam, developing Virtual Reality and holographic display-based projects. She is particularly interested in connections between body and nature and human perception of the connection to nature in technology-driven surroundings.

Dr. Renusha Athugala is a Lecturer in the Games Design program at RMIT University Vietnam and an interactive media designer. He holds a PhD in Digital and Electronic Interactive Media Art, awarded in 2021. Prior to his appointment at RMIT, he worked as a Game Designer at the University of Melbourne and lectured in Design disciplines in Sri Lanka. His areas of expertise include Game Design, Interactive Media, and Practice-Based Research. His research is situated at the intersection of art and science, with a particular interest in how this integration can inform innovative solutions to social, environmental, and health-related challenges. He views game design as a powerful form of artistic expression - one that creates meaningful experiences and has the potential to create real-world impact.

Dr. Surendheran Kaliyaperumal is a Lecturer at the School of Communication and Design, RMIT University Vietnam, with over 16 years of international teaching experience and 5+ years in the creative industries. His areas of expertise include 3D/2D visualizations, game design & development, VR/AR deployment, UI/UX and instructional design. He holds a Ph.D. in Media Design & Communication, with research focused on using AR and Motion Capturing to enhance online learning and reduce transactional distance. With industry experience at studios such as Technicolor, Nickelodeon and DreamWorks as a senior CG 3D lighting artist, he brings a dynamic blend of academic insight and real-world practice to his teaching.