The New Real Observatory Platform: Connecting Generative AI and the Environment

Image credit: The New Real Observatory platform

The New Real Observatory enables accessible, legible and tangible cultural experiences of our changing climate and our role within it. The platform, and the programmes it supports, provide a way for leading digital artists to experiment with environmental datasets, climate models and generative tools to fuel a new generation of environment-conscious projects.

When users work with commercially available Generative Artificial Intelligence (GenAI), they typically encounter a black box – powerful tools that offer little insight into how they work or control over how they operate. The New Real Observatory takes a different approach, giving users unprecedented access to AI systems,

At its core, The New Real Observatory combines two key elements: machine learning systems and climate prediction data.

while making the connection between AI-powered visions of the future and environmental concerns explicit and manipulable.

explore and define meaningful dimensions within the models they generate using pre-configured tools.

Rather than simply generating outputs, users can fine-tune or train their models on small datasets of their own choosing – with full ownership over the data and the resulting models.

Platform architecture

At its core, The New Real Observatory combines two key elements: machine learning systems and climate prediction data. Developed through close collaboration with artists, the platform has evolved through two major phases. The first phase, launched in early 2022, focused on image generation and resulted in four prototype artworks exploring different aspects of environmental perception. The second phase, in 2023–2024, added text analysis capabilities and led to five development awards to explore the conceptual possibilities of the platform, leading on to one full commission (by artist Kasia Molga as part of the *'Uncanny Machines'*).

The machine learning component consists of two main systems: a visual AI based on transferGAN technology, and a text analysis system using Word2Vec. What makes these implementations unique is how artists can shape their operation. Rather than simply generating outputs, users can fine-tune or train their models on small datasets of their own choosing – with full ownership over the data and the resulting models. In addition, they can

The climate data comes from the Copernicus Climate Data Service, offering projections of temperature, precipitation and wind speed for any location on Earth up to 2100. These projections are based on the Hadley Centre Global Environment Model (HadGEM3), providing artists with scientifically grounded environmental scenarios. We invite users to reflect on this data vis-a-vis exploring AI models, to shift and challenge the conceptual dimensions they find in them with a climate-impacted future.

Image credit: The New Real Observatory platform

The SLIDER tool

Central to the platform is the SLIDER tool (Shaping Latent-spaces for Interactive Dimensional Exploration and Rendering), which allows artists to explore how the AI systems model relationships between concepts (words) or images. For visual work, artists can upload two sets of images representing a conceptual dimension, then explore the AI's interpretation of the space between them. With text, artists can define conceptual dimensions using sequences of words, discovering how the AI understands their relationships.

Environmental integration

What distinguishes the Observatory from other AI platforms is its explicit integration of environmental data as a way to contextualise the conceptual dimensions in the data. Artists can use localised climate projections to guide their exploration of the AI's latent space, creating works that respond directly to predicted environmental changes. This creates a unique feedback loop between environmental data, artistic interpretation and machine learning.

Impact

Four artworks were produced directly on the platform by Ines Cámara Leret, Keziah MacNeill, Lex Fefegha and Kasia Molga, alongside a number of conceptual development projects and critical reflections. The platform continues to evolve through artistic use, demonstrating new possibilities for Experiential AI systems to enable profound exploration of AI technologies as well as inspire environmentally-conscious use. By making both AI systems and climate data more accessible and manipulable, it suggests new ways for artists to engage with the climate crisis through AI technology, while maintaining critical awareness of how these tools shape our understanding of nature itself..

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Links

1. The New Real Observatory Platform