Title

Visions of Destruction: Experiencing Climate Crisis through Interactive AI-aided Artwork

Extended abstract

Large AI models, such as Stable Diffusion, have compressed billions of nature images that bear traces of both the catastrophic impact of human interaction and the mesmerizing beauty of natural landscapes, seamlessly merging these contrasting aspects. The past history of humanity, available online, is stored in datasets like LAION-5B, which aggregated 5 billion images from the internet for training such large models like Stable Diffusion. The weights of the checkpoint file are the repository where all this knowledge remains compressed and stored.

In the paper, the artwork "Visions of Destruction" serves the purpose of a case study that explores an innovative real-time AI-driven interactive latent cinema. By harnessing the power of gaze and leveraging prompts that depict various ecological damages caused by humans, this project creates initial beautiful landscapes which mesmerize the flow of animated transformations to landscapes of ecological disasters. Guided by the viewers' gazes, which are seamlessly detected through an advanced eye-tracking system, the real-time animations unfold, offering a captivating exploration of the consequences of our actions on the environment. In other words, a simple act of observation results in transformation of the imagery.

The interactive approach unveils the possibility space of a generative model when is fearlessly exploring the digitalized history of human transformations to nature captured in the training images. In the latent cinema of AI, dreams and nightmares intertwine, as the generative model unravels hidden dimensions and unleashes new possibilities creating visual indeterminacy landscapes[2] of catastrophes to nature. It opens up a realm of limitless creativity and imagination, creating a unique experience for each viewer. It becomes a powerful tool, providing artists and filmmakers with a canvas to transmute their visions into tangible reality, blurring the line between the creator and the created. Moreover, gaze is a mode of interaction in this system taking salient parts looked by the viewers, but also the metaphor of humanity gaze over nature and their impact. In this way, this artwork continues expanding the possibilities of "database art" and its methods, early described by Lev Manovich as "Database as a Symbolic Form"[1]. This expansion includes new methods for "reading" cultural databases compressed in the Stable Diffusion model and as Lev Manovich describe as the "tradition of making new art from accumulations of images and other media."[2] now using Deep learning models trained with very large datasets of images.

When it comes to technological realization, the case study demonstrates recent advancements in text-to-image models. Moreover, the interactive art piece uses real-time deep learning technology for image generation and animations, skillfully combined with an innovative method of interaction through eye-tracking. To achieve this, we make use of Stable Diffusion Inpainting model by using masks created of the specific areas where the viewer looks in the image. These masks enable the transformation the image on the viewer's focal points, guided by prompts that poignantly address the theme of human-induced destruction of nature and creates interpolations to the new images generated. Finally, when

a landscape has been destroyed by the gaze interaction, and it is not looked at for a few seconds it regenerates into a new 'beautiful landscape'.

In this proposed presentation, an artistic case study is showcased, introducing an innovative method for "reading" cultural databases compressed in Stable Diffusion through real-time gaze-based navigation, and integrating AI-generated animations depicting human destructive events into visually stunning, yet synthetically generated, landscapes. The article explores novel strategies for art creation, utilizing imaginary geographies within archives and presenting a unique approach to navigation.

Figure 1. These two image pairs depict the evolution of transformation through public gaze interaction.

Figure 2. Illustrates the artwork setup for audience gaze-based interaction and real-time landscape transformation.

References

[1] Manovich L. The language of new media MIT Press. Cambridge and London. 2001.
[2] Manovich L. The AI Brain in the Cultural Archive. What new artifacts emerge when we look at the next revolution in media?. Available from: https://www.moma.org/magazine/articles/927#fn:1 [Acceded 24th july 2023]
[3] Hertzmann, Aaron. "Visual indeterminacy in GAN art." In *ACM SIGGRAPH 2020 Art Gallery*, pp. 424-428. 2020.