**Computer Art: The World in a Machine's Eyes**

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**Abstract**

From an artist’s point of view, I saw interesting connection between how machines learn and recognize the world and how people develop recognition of the world. For instance, when the machine generates the frames of videos, it takes random latent code as input, allowing it to then learn from existing images to “know” what real images look like. This allows it to then adjust itself and learn to create new images which is very similar to how people know this world from 0 to 1. I tried to demonstrate what the world looks like in a machine’s eyes through a generative video achieved by StyleGAN2 and interpolation algorithms.

**Introduction**

The video is composed of 3 parts: training montage, latent projection and optimization, and interpolation, which respectively matches “birth of consciousness,” “development of recognization,” and “expansion of recognization.”

**Methodology**

A generative adversarial network (GAN) is a class of machine learning frameworks composed of a generator and a discriminator. Through mini-max strategy, GAN learns from the real images and generates fake images with high similarity.

I wrote a new file called run_generator_interpolation.py which combines the interpolation algorithm inspired from an open-sourced StyleGAN project with the StyleGAN2 generator.

**Results**

The following snapshots are from tick 0, 30, 60, 90, and 120, which are composed of 16*16 images each.

For the purpose of art work, I revised the snapshot parameter of the second image to further improve the quality of the generated images. I found that using multiple steps in the optimization process resulted in better images. This is demonstrated in the second row of images. The images are projected from the pre-trained generator.

**References**


This is the normal version of the video presented on a flat plane. Sometimes it shows in a normal way like this, which might be relevant to the player/system.

Basic story line

* Drag to interact with the images on your computer while the video play. (This project is expected to become an interactive digital artwork in future, so it’s very large and might be projected on the wall of a room.)

The video takes about 1000 clips and about a million images. As the video is made to be extremely large, the images can be viewed freely when users drag the screen. (Haven’t tested on other computers yet)