Ideas about the Project from the Perspective of Art

1. Thoughts Flow for Art Project

Since thousand years ago, human have been curious about, thought about, and explored the consciousness. What makes up our consciousness? How do we apply it? The invention of AI motivates human to figure out what we denote as the irreproducible features (feelings, emotions, creativity, imagination, etc) of human's consciousness, and scholars from various fields found it hard to fully interpret them. Learning about AI, I was also curious about the nature of consciousness, as well as whether we could duplicate the consciousness and apply on artificial intelligence. Such questions push me to learn and interpret the human being's process of cognition, and inspire me to develop imagination and connection between human's and AI's development of "consciousness."

The following is my thoughts flow for the art project:

A clearer pdf version is posted on the wikipage.

To summarize about the whole project flow, from an artist's point of view, I see interesting connection between how machines generate images, videos, sounds, texts, etc and how human produce thoughts, and try to demonstrate this connection specifically focus on generation of images and videos. From the perspective of AI and deep learning, I would love to dive into the details of generation, which is actually the work in part f:
f. How do I show: the process of experiment

Show similarities of consciousness development through emotion interpretation: what if an AI knows well about emotion?
An AI with non-humanlike appearance but has its own feelings and memories
Show the process through the simulated process of interaction between this AI and audience
Failed: The connections and similarities between human and AI are hard to show.

- Show an AI’s dream
- AI could also dream
- How’s AI’s dream look like
- How do we show
- What should be discussed about GAN, human’s thought process, information processing, and creation
- During the process: this actually makes me better interpret the general process of developing consciousness, and what could be discusses about that in terms of human and AI
- Another way of showing
- Mind grids!

Table 2. The Draft of Experiment Process

The above part shows my process of drafting what the art output should finally look like, which is really abstract. To clarify, the upper part of the thoughts is a discussion about AI’s emotions and memories, which is irrelevant to current project. The lower part is how I develop my current idea:

At first I was inspired by the name of the novel, *Do Androids Dream of Electric Sheep?*, by Philip K., as well as the work *Machine Hallucination at ARTECHOUSE* by digital artist Refik Anadol, and wanted to show what would an AI’s dream be like to discuss how machine generating and reconstructing images related to human thinking, developing cognition, and reorganizing memories.
However, during the learning about generative adversarial network, I found the process of interpreting how machine generates images is more meaningful than the direct output.

2. What I want to do for computer science part

The following are part of the DCGAN outputs from epoch 1 to epoch 25 trained on Isun dataset.

Epoch 1-4

Epoch 11-14

Epoch 22-25
This process of showcases how the machine generate images from random latent vectors to exact output images, from pixels to edges, to shapes, and then to objects, with color developed. And inspires me to think about how people recognize things: we recognize things from observing its components and features such as shape, color, size, etc. The more things we have learned before in daily life, the more things we are able to recognize or interpret accurately the next time we see it. This kind of process of cognition seems also appear in many other parts in the life, like sound, text, language, etc, and that’s why I think it’s an interesting connection with how we develop our thoughts and consciousness based on our experience. The explanation above is really inaccuracy and general, however, and that’s why I’d love to conduct a project focus on the computer part: to better learn about the generation of computer art, whether images or videos.

Similar but more rigorous interpretations of this kind of generation should be read. So far I read about the Visual interpretability for deep learning: a survey (Zhang et al. 2018) and Interpret what a deep learning sees in medical imaging (Besbes 2020). Interpreting the black box of deep learning, for example in CNN, and make it interpretable is really meaningful to the deep learning applications and interpretation. We are now approaching that through many ways, such as visualization of filters, disentanglement of chaotic representation(Zhang et al. 2018), and CAM (Besbes 2020).

3. Reference
