Ersatz Intelligence: Implications of Machine Learning for the Generation and Interpretation of Art and Artifacts

Daniel Shanken
Hong Kong Baptist University
dshanken@hkbu.edu.hk

Roberto Alonso Trillo
Hong Kong Baptist University
robertoalonso@hkbu.edu.hk

François Mouillot
Hong Kong Baptist University
fmouillot@hkbu.edu.hk

Peter Nelson
Hong Kong Baptist University
peteracnelson@hkbu.edu.hk

Mathis Antony
sveitser@gmail.com

Ryan Au
Hong Kong Baptist University
ryau123@gmai.com

Maya Duan
Hong Kong Baptist University
zqduan42@gmail.com

Jianming Mai
Hong Kong Baptist University
20482965@life.hkbu.edu.hk

Abstract

In this presentation we will speak about "*Ersatz Intelligence*", the title of an artwork and a term that we are using to describe interactions with Machine Learning (ML) and Artificial Intelligence Algorithms (AI) over the course of an artistic project. This project stems from a group initiative entitled *Collaborative Artistic Production with Generative Adversarial Networks* (GANs) that is currently underway at Hong Kong Baptist University's Augmented Creativity Lab. The project came out of reflections on questions introduced in Manuel DeLanda's book "War in the Age of Intelligent Machines" (DeLanda, 2001). In particular the following question was posed: if humans became extinct now, how would an autonomous Artificial Intelligence (AI) interpret leftover human cultural remnants, images, and artifacts devoid of a human context or operator? How would a lone AI view its own technical evolution? This idea has been explored through artistic research and the results will be presented alongside examples of other works that stemmed from the creative interactions with these algorithms. There will also be a reflection on the technical and more poetic aspects of working with GANs and ML for creative production. Through the use of internet-based data-sets sourced from freely available online material, we have been experimenting with how a GAN will interpret particular aspects of material and visual culture, and possibly reveal elements that are not completely obvious to a human observer through its generated output. We have observed that certain patterns can be seen in the GAN-generated material and can offer insights into the data-sets but also into the normally black box processes within the GAN itself.

This talk will move through the different trials and results that developed through this project. It will start with the first experiments of training an image-based StyleGAN2 model on thousands of images of car crashes and random stock images to produce distorted hybrid images. We will also speak about the development of the 3D voxel-based GAN created by our team that we trained on over 2,000 3D models of hand tools.

The main reason hand tools were chosen over other objects is that they are some of the first objects and technologies made by humans and their ancestors and therefore offer a long rich history from which to draw. It is interesting to see how a GAN can interpret such a diverse and uniquely human data-set. Lastly, we will talk about how Game Engines can be used to create networks of these ML agents and we will present the generative video work, *Ersatz Intelligence* that is being developed from this exploration. We will demonstrate how using an Application Programming Interface (API) with the text-generating GPT-2 ML algorithm can be used as a hub or a "brain" for the drawing and organization of these systems. Research and subjects can filter in by training the GPT-2 on specific texts that can influence or skew the generated results to create spontaneous environments and narratives through ML algorithms. As Sungook Hong proposes in one of the texts used to train the GTP-2, technology is humans' "unfaithful offspring" in the sense that our intentions are often re-imagined by technologies, themselves (Hong, 1998). Can ML or AI offer a new perspective on human visual and material culture and creative practices? This talk will ponder such questions through the examination of artistic methods and outputs.

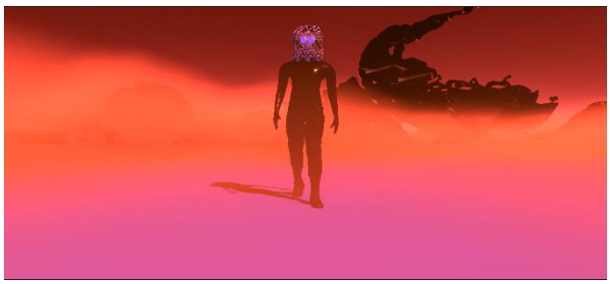

Fig. 1. *Ersatz Intelligence*, 2021, Daniel Shanken, Generative video still.

References

DeLanda, Manuel. 2001. *War in The Age of Intelligent Machines.* Cambridge, MA: MIT Press.

Hong, Sungook. 2019. "Unfaithful Offspring: Technologies and Their Trajectories." *Perspectives on Science*, Vol. 6, no. 3: 160-230

Bathaee, Yavar. 2018. "The Artificial Intelligence Black Box and the Failure of Intent and Causation." *Harvard Journal of Law & Technology*, no. 2: 913-921.

Haworth, Michael. 2016. "Bernard Stiegler on Transgenerational Memory and the Dual Origin of the Human." *Theory, Culture & Society* 33, no. 3: 151–73.

Biography

This artwork is an output of the project *Collaborative Artistic Production with Generative Adversarial Networks* underway at Hong Kong Baptist University's Augmented Creativity Lab and relies on systems developed by the team comprising of **Daniel Shanken**, **Roberto Alonso Trillo**, **Peter Nelson**, **François Mouillot**, **Mathis Antony**, **Ryan Au**, **Maya Duan** and **Jianming Mai**. Daniel Shanken is the lead artist for this artwork. He is an artist and researcher from Los Angeles currently based in Hong Kong. He is an Assistant Professor at the Academy of Visual Arts, HKBU, and a member of the Augmented Creativity Lab. He works across disciplines to create installations, videos, sculptures, sound, and media. His practice examines relationships between technology and cognition, particularly those that operate through interplays with interfaces and networked structures, focusing on 'in-between spaces' with fluid definitions. In his work, he aims to render environmental, cultural, perceptual, and material exchanges through disruptive technologies that allow for shifts in readings and outputs, transforming them in unforeseen ways.