GPT-OA: Generative Pretrained Treatise—On Architecture

EMILY PELLICANO Syracuse University School of Architecture

CARLO STURKEN

University of California Los Angeles

Keywords: GPT, author, artificial intelligence, machine learning, architectecture theory

Technological advancements throughout the industrial era have created more efficient, more economical, and safer machines to aid – and often replace – human operations. Each industrial advancement radically changes social, political, economic, environmental, and even linguistic conditions. Each technological turn has transformed communication between physical and intellectual entities shared by humans. Recent advancements in technological language models have made artificially intelligent machines, specifically *Generative Pretrained Transformers (GPT)*, a potential active participant in the creative process. What does it mean to transfer creative responsibility to artificial intelligence? Is *GPT* the death of the author or the invention of a new author? This project explores language in machine learning and the role of the author/architect within the creative endeavor of architectural discourse.

GPTs are artificially intelligent text generating machines that possess the capacity to influence language patterns, create new hybrid languages, and as a result influence human creativity and hermeneutics. OpenAI GPT-2 is pre-trained on a dataset composed of 8 million common web pages.¹ The use of a variety of web pages implies a certain degree of diversity, theoretically capturing a wide range of formal and informal social, cultural and economic language samples. However, these models are authored by humans, who are responsible for selecting sources for the training data, they are therefore bound to harbor a degree of implicit bias. This is surely to be anticipated when the datasets include web based sources known to contain the best and worst of human language sentiments. While the GPT-2 model is competent at predicting the next words in a pattern of general language, when engaging in a specific discourse that may not be well represented in the training, another level of 'fine tuning' is required.² Seeking an explicitly architectural discourse, we have fine-tuned a model on classical architectural treatises from Alberti, Vitruvius and Palladio to set a deeply canonical architectural context, and diversified that field with text depicting accounts of psychedelic experiences to invoke a contemporary, extra-ordinary tone within our processing logic.

Currently, the public may access these open-source models via web-based interfaces such as *GitHub*³ or *Google Colaboratory*,⁴ both allowing for real-time collaboration, editing and shared development of software. Creativity is neuroscientifically accepted as either a combination of existing thoughts, the exploration of ideas beyond what is existing or assuming that existing ideas are wrong and transforming reality accordingly. Traditionally assumed to reside within the human brain, creativity may now belong to a wider network of 'ideas' to be combined, explored or transformed via computationally simulated neural networks.

A number of parameters are established at the outset of the text generation process, selecting the 'length' of the output (number of words), the 'temperature' (which establishes how close the output adheres to a 'normal' response), the number of 'nsamples' and 'batches' of output generated, as well as the 'prefix' (which we are referring to here as the 'human-input').

The theoretical treatise, *De Architectura* by Vitruvius, stated that architecture requires the "interaction of practice and reason...a larger body of knowledge inevitably linked to the social, political, economic, and environmental context of its making."⁵ In this Virtuvian spirit, our project updates the architectural treatise for the Fourth Industrial Revolution by operating as a collaboration between human and machine. Similar to literary works such as *Pharmako-AI*⁶ and *1 the Road*⁷ which employ *GPT* models to generate contemplative and reflexive texts, we have prompted the historic treatises in a conversation with a broad range of contemporary architectural thinkers, peering into the space between a body of canonical knowledge and a contemporary context of thinking that is tied to contemporary social, political and economic and environmental issues.

Creativity is no longer an act of anthropocentric genius originating in the privacy of the human brain. Natural language models rely on a collective language, yet blur the line between subject and object, the one and the many, the conscious and the unconscious. The role of the author is blurred with that of the editor. The human-author is aware that the machine-author does not possess conscious construction of narratives, the ability to discern truth from false, or have accurate world-modeling potential. It may be that precise intersection where the true gpt2.generate(sess, length=200, temperature=1, prefix="I grew up in a country where the architecture was designed to oppress one group whilst enabling the other to thrive.", nsamples=5, batch size=5):

Input:

I grew up in a country where the architecture was designed to oppress one group whilst enabling the other to thrive. - Wandile Mthiyane

Output:

I grew up in a country where the architecture was designed to oppress one group whilst enabling the other to thrive. The mountains were scenery and not of any great deal; rather, they stood to my training as great scenery props. When I looked down at the floor of the faces I could see nothing, shape or form, but only light and color. That the books were chairs and not shelves I could see but clay in front and none at back; neither the rack nor the table, but the absence of any overprinted back of any chair. The texture of the chair and the appalling lack of any decently done muscle art help me to my English level; the only decent muscle art I know of is Movements and not Words. But then, maybe my humble student could show me Three months after this story was published I received an order for a work in the county mail. The mail was very heavy and, so to expect, the ordering edition of The Dresden Encyclopedia of Late Antiquity was rushed ================= I grew up in a country where the architecture was designed to oppress one group whilst enabling the other to thrive. The children of the land taught us the ropes by which school was designed, the mescalin taker, by means of whom to claim credit for your intellectual effort is like to be one with an ascending mist in the clouds. You can't be black and white because you didn't teach me the ropes, you can't be straight because you didn't know how to read or write, or, worse, because you couldn't be gay because of the misconceptions about homosexuality that women and gay men have about each other. But I, who am obviously a poor artist, can't be bothered with anything that isn't deeply negative. I paint love, light, sound, color, and texture in extremely liquid shades of pink, merlot, and purple. (There I showed you, essentially, that the basis of bread is a plant that grows inside a sachet of flames.) And, boy, how often do you see Rose painting draperies in the background: ghostly apparitions of _______ I grew up in a country where the to thrive. The children of screen and

MODEL PARAMETERS

INPUT (Human-Author Input) "I grew up in a country where the architecture way group whilst enabling the other to thrive." - Way

OUTPUT (Artificial-Author Output & Human-Editor Filtration) The mountains were scenery and not of any great (to my training as great scenery props. When I low the faces I could see nothing, shape or form, bu That the books were chairs and not shelves I coul and none at back; neither the rack nor the table overprinted back of any chair. The texture of the lack of any decently done muscle art help me to n decent muscle art I know of is Movements and not humble student could show me A woman in a Early (and some sketches of some Mass Three months after

Figure 2. GPT-2, Standard Model Parameters for all Inputs.

Figure 3. GPT-2, Standard Input-Output Example.

potential lies, in the dissolution of the authority figure through the diversification and proliferation of authorship.

The examples included demonstrate how the tool surpasses mere utility and enters into an act of creativity, engaging in an intersubjective discourse between human, technology, and language. The 'redacted' text-images selected for this submission exhibits the human-author input (in bold font), the machine-author output (the body of text edited by the human-editor), and the human-editor filtration (the redacted text). The input parameters, represented by the coding script at the beginning, allows the human-author to determine the processing characteristics of the artificial-author. In addition, each output (the body of text) is a unique result of a "prefix" (the human-author input) that prompts the machine-author to write. The few images selected are a small sample of the hundreds of pages generated for this exploration, a collaboration between human and machine creativity that serves as a provocation to the discipline to consider the potentials of engaging AI as a computational collaborator, capable of unexpected and provocative synthetic opportunities.

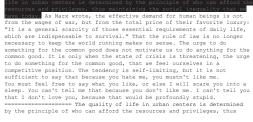
In the months since abstract submission for this project, *GPT-3* has been released to the general public, promising exponentially 'better', more 'natural' language generation, it's human-likeness as a standard of success driven by industrial marketability. Here, our goal is not to replicate 'natural' or 'typical' human responses. Instead, we propose that the potential for creativity resides in the extension of the latent space of mis-interpretation, mis-appropriation and the unpredictability of the less sophisticated *GPT-2* models. To that end, this project is being further developed by using open source algorithms to generate images prompted by the *GPT-2* text output generated as a creative collaboration between human and machine, further blurring the

boundaries of language, image, human, machine, author and editor (Figures 9 and 10).

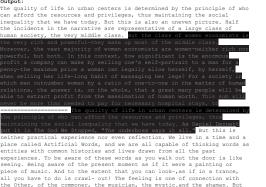
Speculation on the 'use' of this technology is in its infancy. In fact, the prospective exploration presented here has unearthed more questions than conclusions about the role of machine-humanauthorship. However, one conclusion is clear, a collaborative dialogue between machines and humans presents immense potential for an expanded creative process that moves beyond simple language and influences our conscious understanding of the world in which we exist. The excerpts exhibited here show the transcendental qualities of language unbound by indoctrinated learning whose stories described real, yet surreal, spatial and relational environments. With the presentation of this project, we intend for the narrative process to be an invitation to explore the possible boundaries between author/editor, human/machine, text/image, without prematurely prescribing a finite 'usefulness'. As we approach the precipice of a collective knowledge whose future will be inevitably integrated by machine-human interactions, this exploration is not a means-toan-end but a means-to-speculate a future collective creativity.

ENDNOTES

- 1. Priya Shree, *The Journey of Open AI GPT Models*: (The Medium, 2020).
- 2. Daniel M. Ziegler, *Fine-Tuning Language Models from Human Preferences*: (arXiv.org, et al, 2020).
- 3. Jeff Wu, Open AI GPT-2: (github.com/openai/gpt-2/blob/master/LICENSE, 2019)
- Max Wolf, Max, Train a GPT-2 Text-Generating Model w/ GPU For Free: (https://colab.research.google.com/drive/1VLG8e7YSEwypxU-noRNhsv5d-W4NfTGce, 2021).
- Marcus Pollio Vitruvius, *De Architectura: The Ten Books on Architecture*, trans. Morris Hicky Morgan: (1914; repr., New York: Dover Publications, Inc., 1960).
- 6. K. Allado-MacDowell, Pharmako AI: (Ignota Books, 2021).
- 7. Ross Goodwin and K. Allado-MacDowell, 1 the Road: (Jean Boîte Éditions, 2018).



But it in the God We Stopped, "The underboost says it all." But this is neither practical experience nor even reflection. We live in a time and a place called Artificial Words, and we are all capable of thinking words as entities with common histories and lives drawn from all the past experiences. To be aware of these words as you walk out the door is like seeing. Being aware of the present moment as if it were a painting or plece of music. And to the extent that you can look-, as if in a trance, all you have to do is crawl- out! The feeling is one of connection with the Other, of the commoner, the musician, the mystic. and the shaman. But this is a personal, as well as a ritual, experience.

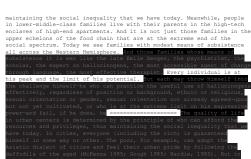


Input: The quality of life in urban centers is determined by the principle of who can afford the resources and privileges, thus maintaining the social

Input: The gu

Output:

o attempt



Input: I have been always fascinated by the idea that emptiness is never empty at all, if you look at insistently, but the space where life and emotions can be projected into. - Simone Bossi

Output: I have always been fascinated by the idea that emptiness is never empty at all, if you look at it insistently, but the space where life and emotions can be projected into. One always has been, even in the grave, a window or other structure of some sort that might be considered a symbol of some

other structure of some sort that might be considered a symbol of some transcendent actuality. As that what, in the words of a city count D between one hould be location applied. The order of things in this world might be different, the beauty of the things they represented more beautiful, but the basic fact of human experience would still be the same. The unconscious mind would be play, but with more severe abnormalities of function and a more refined, but more honest attitude towards the universe. This is what mother Earth looked like at that time—a total vanish, a partiality that is, in every case, like utter feebleness. But,



inequality that we have today. - Tainá de Paula

Figure 4. GPT-OA, Pages 2-3 of 80.

Output

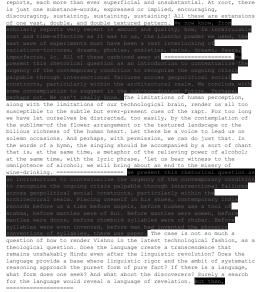
the experiment are usually the nont interceining time for sound differentiation and reuniverses. As Zarkow wrote, 'the distinction lies not in the shapes and forms of the distinctions, but in the ability to distinguish within and without the constraint of traditional beliefs and images.' but how much more difficult it is to distinguish between these self-validating forms of existence and the illegitimate and self-serving notions of existence that they inflict upon those who encounter them. Through these three conditions the unabashedly fabricated and the unquestioned are transformed into the most precious components of the organic pattern of consciousness. Ordinary consciousness is a continuous stream of disordered impulses. Unlike the patterns on the walls of a dressing room, their disordered qualities cannot be deduced from the texture of the deflected showers, or the color and shape of the clothes. shape of the cloth their disordered present this

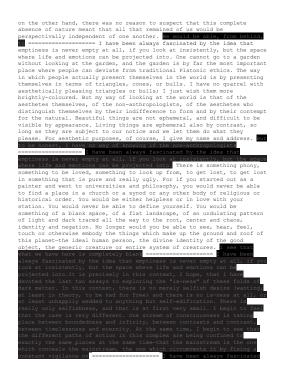
------ We present this rhetorical question as an introduction to contextualize the urgency of the contemporary ndition to recognize the crisis palpa



Output Output: We present this rhetorical question as an introduction to contextualize the urgency of the contemporary condition to recognize the ongoing crisis palpable through intersectional failures across geopolitical social constructs, particularly within the architectural realm. **Ex. 5. 1023**

Input: We present this rhetorical question as an introduction to contextualise the urgency of the contemporary condition to recognize the ongoing crisis palpable through intersectional failures across geopolitical social constructs, particularly within the architectural realm. - Matri-Archi







Input: Beauty is not a utopian idea. Utopia is not impossible. With new technology utopia can be built. Beauty can be achieved with logic, rationality, harmonious proportions, and appropriate scale. - Alberto Campo Baeza

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All of us look out for these kinds of results. Enlightenment, for example, is not predestined to produce an end to suffering, but to bring about more than a little suffering about the way in which we

Figure 6. GPT-OA, Pages 6-7 of 80.



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must share the law of diminishing and cosynchronicity. But because of the law of diminishing and cosynchronicity, every planet is a jewel-enclosed universe of neurons and fibers, of blod and spirit, of living.

Public space must be as free and abundant as the air we breathe. -Elizabeth Diller



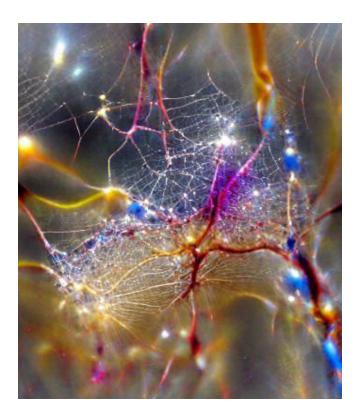


Figure 9. A Jewel Enclosed Universe Of Neurons And Fibers.

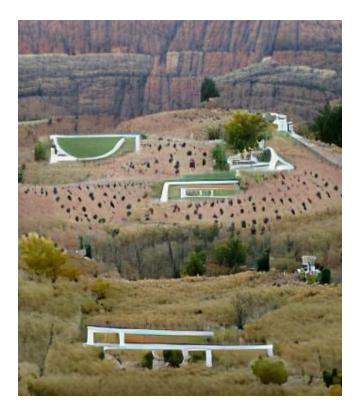


Figure 10. The Graves Overlook The Landscape And Have The Same Shape.