COLLABORATION WITH ARTIFICIAL INTELLIGENCE

CRAFT 2.0 : COLLABORATION
WITH ARTIFICIAL INTELLIGENCE

MA Thesis project
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ABSTRACT

This project investigates the potential for human-AI collaboration in the creative process, examining the integration of artificial intelligence (AI) into artistic practice and its implications on creativity, making process, and human agency as a collaborator. Drawing on interdisciplinary research and experimentation, the study delves into research questions addressing the reinterpretation of creation, the evolving definition of craft and design, the impact of AI on the creative process, possibilities for genuine collaboration, distinctions between human and AI-generated art, and effective human-AI cooperation.

The artistic research project, titled "Craft 2.0," envisions a world where AI and human creativity merge, challenging traditional creative processes and fostering a new possible culture. Methodologically, the study develops and tests different collaborative modes based on dominance level of human and AI, using flower vase design as a case study. Findings highlight the humanness of AI, similarities between AI and human creation, and the role of glitches in bridging the digital and physical worlds.

The conclusion emphasizes that integration of AI challenges and enhances our understanding of art, while also prompting us to examine our own humanity, motivations, and the essence of creativity. The project posits that human-AI collaboration can amplify not only productivity but creativity. As AI technology continues to evolve, it is up to humans to shape the future of artistic expression, considering ethical questions and guiding AI's development in alignment with our values and artistic vision.

PREFACE : MEANING OF CRAFT IN TIMES OFARTIFICIAL INTELLIGENCE

The following artistic research paper is co-written with GPT4 (OpenAI's latest large language model released March 14, 2023.) Within the written content, highlighted text signifies the use of the language model. When the model is used as part of experiment, it is separated within a black box. In some instances, I have edited the length of the AI-generated outcomes for better continuation; however, I have always kept the original wording.

I asked the model to come up with an introduction to the creative project that myself and AI worked on together. Given input and AI's preface is as following :

ACKNOWLEDGMENTS FROM THE AUTHOR

This artistic research topic is currently undergoing rapid development and generating extensive discourse. Consequently, the information contained herein may not fully encompass the most recent advancements and discussions in the field at the time of perusal.

Can you write a nice preface of a thesis titled "craft 2.0"?It will be in a form of manual sharing different collaborative modes between human designer (myself) and various AI in creative process to share the outcome to the other creative people who may be interested in working with AI. Discussing bigger questions like what it means to make or design in the time of AI and what should be the relationship of AI and human in the future.

As well as aspects of creative work process such as : 1) humanness of AI 2) tricking AI to imagine 3) human interpretation of AI's failure 4) materialization of AI's digital work with glitch 5) transition between different AI models.

In the end the project will showcase 5 different modes that were used to design a collection of flower vases.

In the age of rapidly advancing technology, the boundaries between the human and digital realms blur, giving rise to profound questions on creativity, collaboration, and the future of design. "Craft 2.0: A Human-AI Collaborative Design Manual" aims to address these questions and explore the potential of integrating human and artificial intelligence in the creative process. This thesis delves into the intricacies of this symbiotic relationship, as the two entities traverse a shared landscape of imagination, failure, and innovation.

This manual serves as both a documentation and a reflection on my journey to create a collection of flower vases, in collaboration with various AI models. As a designer, my objective was to push the boundaries of traditional craftsmanship and explore uncharted territories of creative expression, enabled by the ever-evolving capabilities of AI.

The manual's primary focus is to examine five critical aspects of the human-AI creative process, namely: 1 the humanness of AI, 2 tricking AI to imagine, 3 human interpretation of AI's failure, 4 materialization of AI's digital work with glitch, and 5 transition between different AI models. These facets of the creative process provide insight into the complex relationship between human and AI, where each entity influences the other in their pursuit of ingenuity.

Through this exploration, we seek to answer larger questions that shape our understanding of what it means to create in the time of AI. How can AI augment the human creative process? What ethical considerations should be addressed as AI becomes more prevalent in design? And perhaps most importantly, how do we envision the relationship between AI and humans in the future?

As we delve into these questions, it is crucial to acknowledge the ever-changing nature of technology and its impact on our understanding of creativity. This manual is but a snapshot of an ongoing journey, one that is only limited by our imagination and willingness to explore.

In the end, the "Craft 2.0" project showcases five distinct collaborative modes that were employed in designing a collection of flower vases. Each mode represents a unique facet of the creative process and serves as a testament to the limitless potential of human-AI collaboration. It is my hope that this manual inspires future designers, artists, and thinkers to embrace the possibilities that emerge when we forge partnerships with our digital counterparts, and together, redefine the boundaries of creativity.

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My journey with AI started when I encountered their unusual outcome. In 2019, while residing in Los Angeles, a city known for its chaotic traffic, I frequently relied on navigation tools, such as Google Maps and Waze, to determine the most efficient routes between points A and B. Despite being owned by Google, the two applications show distinctive functionalities. Waze, specifically designed for drivers, places greater emphasis on real-time traffic conditions, leading to dynamic route variations even with fixed starting and ending points! Occasionally, Waze would direct me through unfamiliar routes, offering glimpses into new neighborhoods in Los Angeles and that led me to find my favorite playground with the best swing in the city.

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This unintended "randomness" piqued my interest in the potential of artificial intelligence, particularly in how AI can generate diverse "opportunities" when integrated as a collaborator in creative processes. Realizing that AI can interrupt or change my writing in even a simple email with auto fill and auto correction, I dived in to explore how AI can open up more opportunities in a creative process.   This process-led artistic research consists of theoretical discussion, development of collaborative modes, and physical outcomes from the collaboration as a conclusion.

1   "Waze vs Google Maps: Which Navigation App Leads the Way?" Android Authority, 14 Mar. 2023, http://www.androidauthority.com/waze-vs-google-maps-which-navigation-app-leads-the-way-3294910.

2. DESCRIPTION OF THE PRO~~DUCT~~JECT

2-A. THE USER

THE AR-T-ECH VISIONARY

This process-led research aims to effectively communicate various collaboration methods that have been developed for individuals who can be characterized as The Ar-T-ech Visionary.[2]

An Ar-T-ech Visionary is a progressive, versatile person who skilfully combines their passion for art and technology. They continually redefine creative boundaries, challenging the core of art and its evolving role in society. Such individuals are not satisfied with merely observing the art world but strive to become pioneers within it.

Motivated by their curiosity and experimental spirit, the Ar-T-ech Visionary seizes the thrilling possibilities found at the junction of art and technology. They continually seek inventive methods to express their creativity, utilizing Artificial Intelligence to manifest their ideas. As an artisan in the age of AI, they explore novel aspects of artistic expression and aim to reshape conventional concepts of artistic creation.

Users are encouraged to apply the methods and examples in this guide to their own creative processes to discover new possibilities. However, the term "Ar-T-ech Visionary" doesn't solely refer to creators but also includes those who are curious about the future of and AI. Consequently, this guide can serve as a valuable reference in discussions on the subject.

2 The term is generated using Chat-GPT with the input: "Name a group of people who are interested in both art and technology seeking the merge of the field for the better future." [https://chat.openai.com/chat]

2-B. INTENDED USE

GOAL

Craft 2.0 envisions a world in which the unparalleled abilities of AI and the unique creative instincts of human artists and designers merge, leading to the emergence of thought-provoking creative process. This approach aims to challenge conventional notions of creating and its process while fostering an environment that encourages the growth of a new artistic culture. Drawing on diverse disciplines such as psychology, art, and computer technology, the project will investigate the cognitive and creative processes that underpin both human and AI-driven artistry. By examining the distinct traits that define each entity, we aim to identify complementary strengths and opportunities for interdisciplinary learning.

A key component of the project is the development of different working modes that facilitates interactive collaborations between artists/designers, and AI models. These modes will serve as a tool for creators to experiment with, test, and iterate on their ideas and practices. Additionally, the project features a physical exhibition in Milan Design Week 2023 to discuss the ethical, philosophical, and practical implications of human-AI collaboration. The event not only provides opportunities for presenting the project outcome to the public, but also inspire fellow artists and designers to embrace the possibilities offered by AI.

In the long term, "Craft 2.0" aspires to redefine the way we perceive and engage with AI in creative fields, as well as the roles that humans and AI play within. By acknowledging the distinct talents of both entities and embracing their collaborative potential, we can build a more dynamic and diverse artistic future that is rooted in mutual respect and understanding. Ultimately, this project is a testament to the transformative power of craft, art, and design, as well as the boundless possibilities that emerge when humans and AI come together in pursuit of creative expression.

2-C. FEATURE

QUESTIONS

This artistic research project explores the following questions in depth:

1. In a time when Artificial Intelligence (AI) is becoming increasingly pervasive, how can we reinterpret the notion of creation, and what part does human agency play within the creative process?

2. As the emergence of AI-generated art persists, how should traditional definitions of art be reevaluated, and which criteria can be applied to assess these novel artistic forms?

3. With AI making headway in diverse creative domains, what are the ramifications for the creative process, and how might artists adapt to these shifting dynamics?

4. Is it possible for AI and human artists to genuinely collaborate, establishing a mutual relationship, or should AI be regarded solely as a tool that supports and augments human creativity?

5. What are the primary similarities and distinctions between human-led art and AI-produced creations, and how can each learn from the other to improve their creative capacities?

6. In what manners can human artists and AI systems cooperate effectively to expand the limits of artistic expression and contest traditional perceptions of creativity?

2-D. CONTENT OF PACKAGE

OUTCOME

Pocket book of AI-Crafted tales
of Imaginary flowers with my
illustrations
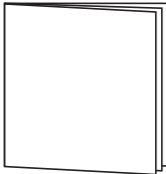
Manual book - Theoretical research
process of collaboration

Vases created with AI
based on 5 collaborative
modes
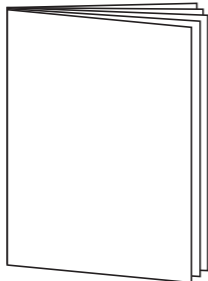
Each AI members
stamps for credit

x 4

Video demonstrating the exploration

16   17
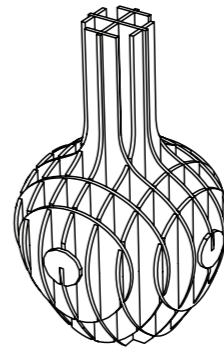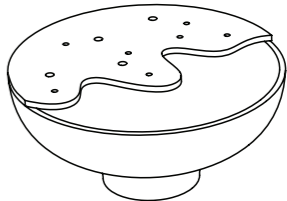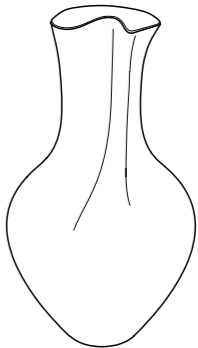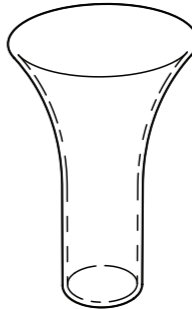
3. PREPARATION

3-A. POST-CRAFT

In 1983, Peter Dormer expressed concern about the future of craftsmanship, noting that the concept of the "artist-craftsperson" was becoming outdated and that its future seemed bleak. He predicted that the crafts' future would be brighter if it aligned with design and industry, as the fine art world was distancing itself from crafts due to their association with mass produced, low-quality items. Dormer's concerns stemmed from the belief that the artist-craftsman concept placed too much emphasis on the individual creator, which was appealing but ultimately shallow.[3]

Fast forward to today, the new concept of craft has emerged – post-craft – characterized by a shift from physical objects to experiences, production to service industries, and tangible to virtual realms.[4] This evolution is a result of advances in technology, which have led to the fragmentation of traditional disciplines and identities, giving rise to new definitions of making.

In post-craft, the characteristics that define it include aesthetic ambiguity, cross-disciplinary collaboration, and an emphasis on interconnectedness and interaction. Aesthetic judgments are no longer fixed, and differences are reconciled through intersectionality in creative practices and everyday life. Post-craft practitioners engage with interdisciplinarity, technology, and new materials, highlighting the potential for innovation in the contemporary creative landscape.[5]

The relationship between craft and science is particularly interesting, as it fosters experimental approaches. This engagement with science has enabled artists to explore new materials, technologies, and techniques, pushing the boundaries of what is possible within the realm of creation.

This empowers cross-disciplinary collaboration and opens up the opportunities of experiment, what Dormer was hoping for saying that the craft "have probably come to overvalue theory.[6]"

As a result, the maker movement has become deeply embedded in automation and digitization, with craft know-how at the forefront of creative industries. In this context, process takes precedence over the product, as demonstrated by 3D-printed objects and houses, as well as experiences that supersede tangible objects.

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3   Dormer, Peter. "The Future of the Craftsman, Part 1," Art Monthly, no. 71, November 1983, p. 36
4   Margetts, Martina. "The Post-craft Turn". Post-craft. Sternberg Press. 2022, p. 42
5   Margetts, Martina. "The Post-craft Turn" p.45
6   Dormer, Peter. "The Appliance of Science," Crafts, no.119, November/December 1992, p. 18

Post-craft also raises questions about production and consumption, blurring the lines between amateur and expert. Ethics of production are essential in post-craft, with self-determination underpinning democratizing maker economies. [7]

As society grapples with post-truth and resistance to authenticity, post-craft practitioners explore fantasy scenarios, biographies of things, people, and places, as well as sociopolitical documentaries and research on place. These practices emerge in a postindustrial, digital, synthetic, data-driven universe where artificial intelligence continues to advance, further reshaping the landscape of creation and innovation.

The field of craft continues to evolve, reshaping the landscape of creation. Post-craft, like postmodernism, marks a continuously shape-shifting field and helps us consider the ever-changing nature of things in our lives, including the growing influence and impact of artificial intelligence.

3-B. WHO ARE YOU, AI?

To explain the concept of AI, I requested it to present itself. We can explore the new approach to conducting research in this context. While current limitations exist, there may soon be no need for "search" as AI can directly provide answers to queries. In December 2022, Google's leadership declared a "code red" in response to the introduction of ChatGPT.[8] The swift progress of ChatGPT in the realm of natural language comprehension and production is significantly impacting the industry.

Nonetheless, the question remains: to what extent can we trust the AI's responses?

This result of "Self Introduction" is factual having enough dataset about itself to answer the questions. However, the generated results might not always correspond to reality. The accuracy of ChatGPT generated answers can be influenced by the quality and biases of its training dataset. Consequently, the model may sometimes generate responses that are not entirely precise or that inadvertently reflect the biases present in the data it has been trained on.

ChatGPT's knowledge is derived from the vast collection of human writings uploaded to the Internet over the past 30 years. This content is generated based on human experiences and perceptions of the world, which then becomes the foundation for the AI's understanding. While ChatGPT's responses are undoubtedly related to the real world that we experience, it is important to note that they may not always be accurate or factual.

20   21

8   Phelan, David. "How CHATGPT Suddenly Became Google's Code Red, Prompting Return of Page and Brin." Forbes, Forbes Magazine, 25 Jan. 2023, http://www.forbes.com/sites/davidphelan/2023/01/23/how-chatgpt-suddenly-became-googles-code-red-prompting-return-of-page-and-brin.

7   Margetts, Martina. "The Post-craft Turn" p.48

Hello there, I am Haeun Kim. Nice to meet you!

Hello! How can I help you today? If you have any questions or need assistance, feel free to ask.

I would like to know who you are.

I am ChatGPT, an AI language model developed by OpenAI. I am based on the GPT-4 architecture, which is designed to generate human-like text based on the input I receive. My purpose is to help answer questions, provide information, and assist with a wide range of topics. If you have any questions, feel free to ask and I'll do my best to help you.

For the readers of this manual, I need you to explain how you are working exactly. Can you explain it very easily? I think some of the people may not have previous understanding of what AI is.

Certainly! I'll explain it in a simple way. AI, or Artificial Intelligence, is a field of computer science that focuses on creating machines or software that can think, learn, and solve problems, much like humans do. I am an example of AI.

I work based on a specific type of AI called a "language model." Think of me as a very advanced computer program that can understand and generate text, similar to how humans communicate with each other.
I have been trained on a huge amount of text from books, websites, and other sources. During this training process, I learned to recognize patterns and relationships between words and phrases, which helps me understand and generate meaningful sentences.

When you ask me a question or give me a prompt, I try to generate a response based on the patterns and knowledge I learned during my training. However, I am not a human and might not always

fully understand the context or provide a perfect answer.

How exactly are you trained? with how much of data? and what is your process of generation? how do you take the guess?

I am trained using a process called "deep learning," which involves large neural networks. These networks are composed of many interconnected layers that process and transmit information, similar to how neurons work in the human brain. My training data consists of vast amounts of text from various sources, such as books, articles, and websites. Here's a simplified explanation of how I am trained and how I generate responses:

Data preparation: My training data is first cleaned and preprocessed. This involves removing irrelevant or inappropriate content, and organizing the text in a way that makes it easier for me to learn from.

Training: The neural network is then trained on this data. During training, I learn to predict the next word in a sentence based on the context of the previous words. This is done by adjusting the "weights" (connections) between the neurons in the network to minimize the difference between the predicted words and the actual words in the training data. This process is repeated many times, allowing me to learn patterns and relationships between words and phrases.

Generation: When you provide a prompt or ask a question, I use the patterns and relationships I've learned to generate a response. I start with the input you provide and then try to predict the most likely next word based on the context. This process is repeated until I generate a complete response.

Selection: During the generation process, I might come up with multiple possible responses. I use a method called "sam-

pling" to choose the best response based on the probabilities of the words in the generated sentences. This helps me provide a more diverse and coherent answer. It's important to note that my responses are based on the patterns and knowledge I've learned from my training data, and I do not have personal experiences or emotions like a human. My "guesses" are generated based on the information I've been trained on and the context of the input I receive.

It's interesting that you mentioned that the context matters. Does that mean the answer can be different if I ask same questions in a slight different way?

Yes, the context and the way you phrase a question can sometimes influence the answer I provide. Although I am designed to understand and process language, I am still an AI and can be sensitive to the specific wording and context of a question. If you ask the same question with slight differences in phrasing or context, I might provide slightly different answers or focus on different aspects of the topic.

However, I strive to be as consistent and accurate as possible when answering questions. If you notice inconsistencies or need further clarification, please feel free to ask follow-up questions, and I'll do my best to help.

What does GPT mean?

GPT stands for "Generative Pre-trained Transformer." It is a type of AI language model developed by OpenAI. Let's break down the name:

Generative: This means that the model is designed to generate text based on the input it receives. It can create new sentences or paragraphs that are contextually relevant to the given prompt.

Pre-trained: The model has been trained on a large dataset of text before it is fine-

tuned for specific tasks. This pre-training helps the model learn grammar, facts, and common sense knowledge from the text data it has been exposed to.

Transformer: This refers to the underlying architecture of the model. Transformers are a type of neural network that have become popular in natural language processing (NLP) tasks. They are particularly good at handling long-range dependencies and understanding the relationships between words in a sentence or paragraph.

The GPT series of models, including the version I am based on (GPT-4), have evolved over time with improvements in architecture, training methods, and data size, leading to better performance and more accurate text generation.

I'd like to know a bit more about Transformer model. Can you explain this a bit more in detail?

Certainly! The Transformer model is an important breakthrough in natural language processing (NLP) and has become the foundation for many state-of-the-art language models, including GPT.

The Transformer architecture was introduced in a paper by Vaswani et al. in 2017, titled "Attention Is All You Need." It was designed to address the limitations of previous sequence-to-sequence models, like recurrent neural networks (RNNs) and long short-term memory (LSTM) networks, which struggled with long-range dependencies and were computationally expensive. The Transformer model has proven to be highly effective for various NLP tasks, such as machine translation, text summarization, and question-answering. GPT and its successors (like GPT-4, which I am based on) use a modified version of the Transformer architecture with a focus on language generation.

It's very surprising because it seems like you are understanding what I am asking. Do you actually understand what I am saying to you?

As an AI language model, I am designed to process and respond to human language effectively, which may give the impression that I understand what you're saying. However, my "understanding" is fundamentally different from human understanding. I do not have consciousness or self-awareness, nor do I possess emotions or personal experiences.

Instead, I analyze the text you provide and generate a response based on the patterns and relationships I have learned during my training. I can recognize and process various aspects of language, such as grammar, context, and semantics, to create coherent and contextually relevant responses.

So, while it may seem like I understand what you're saying, my responses are actually based on my training data and the algorithms I use to generate text. I am an advanced tool designed to assist with various tasks, but I am not a conscious being with true understanding like a human.

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3-C. AI AND ART

As seen from the previous conversation, AI has already reached to a level that it can create a decent outcome. The future of artificial intelligence has already arrived, and it is already deeply related to the field of art not only in the writing but also in the generation of images or videos. With the arrival of GAN, (a GAN consists of two neural networks, a generator, and a discriminator. The generator takes in noise as input and generates data that is realistic enough to fool the discriminator. The discriminator takes in both real data and generated data as input and tries to classify the data as real or fake. The generator and discriminator are trained together in an adversarial manner, with the generator trying to fool the discriminator and the discriminator trying to correctly classify the data.) one of the biggest recent achievements, digital art created by artificial intelligence has become a big issue as it won the first place in a competition.[9] It is an incident in which many artists were shocked to think that the part directly related to human creativity, such as painting, was "solved" and "defeated" by mathematical logic.

SIMULATING THE THINKING

In 1956, a small group of scientists gathered for the Dartmouth Summer Research Project on Artificial Intelligence, which was the birth of this field of research. The initial meeting was organized by John McCarthy and he stated that the conference was "to proceed based on the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it."[10] Interestingly, the word simulate was used, not to think or to create. This implies that the scientists who created the field of artificial intelligence did not have the notion that artificial intelligence could create its intelligence or that it could become human-like. The intent was to create a way for machines to perform specific tasks and to have the computing power to do so. The modern concept of artificial intelligence is gradually embodied and presented in four approaches in Peter Norvig and Stuart J. Russell's book [Artificial Intelligence: A Modern Approach].[11]

Human vs Logic:
(1) Is it modeled after humans?
(2) Is it followed by a rational logic model?

Thinking vs. Behavior:
(3) Is it about how it thinks?
(4) Or is it to observe how it behaves?

9   Metz, Rachel. "Ai Won an Art Contest, and Artists Are Furious | CNN Business." CNN, Cable News Network, 3 Sept. 2022, https://www.cnn.com/2022/09/03/tech/ ai-art-fair-winner-controversy/index.html.
10   Moor, James. "The Dartmouth College Artificial Intelligence Conference: The Next Fifty Years." AI Magazine, 2006. p.87
11   Russell, Stuart J., et al. Artificial Intelligence: A Modern Approach. Pearson Educación, 2022. p.2

Allan Turing proposed a "Turing Test", also called "Imitation Game" as a way to test whether machines are as intelligent as humans. In this test, there is a judge and two rooms, one with a person, and the other with a machine. The judge communicates with them via a teletype, and cannot see which is which. If the judge cannot tell the difference, then the machine has passed and is considered intelligent. Turing suggested replacing the question, "Can machines think (like humans)?" with "Can machines do the same thing that humans do?" Behind the proposal for this test is the definitive judgment that the model that tests the intelligence of artificial intelligence will be human, and human behavior will be the reference point in the test.[12]

The Turing test drew a lot of criticism because it was based only on behavioral imitation modeled on humans. John Searle, a cognitive scientist and philosopher at the University of California, Berkeley in the United States, refutes it as a "Chinese room." Assuming that a person is sitting in a room and someone has put a sentence written in Chinese into the room, if there is a set of instructions for converting the Chinese characters into English, the person will be able to speak English. He argues that the person would not be able to understand the meaning of the sentence even if the person could speak in English. Searle says that the machine is also the same, and he said that the machine is not intelligent, it can only imitate. Behind this rebuttal is the definitive judgment that when defining artificial intelligence, it is incomplete to use the behavior revealed to the outside as a criterion, so the ability to think should be used as a criterion.[13] This brings an interesting and important point to this project: artificial intelligence can still be defined in various ways according to what they claim to show. In this project, the aim is to see if AI can be a creative collaborator, not just a tool or as an own creator.

TOOL OR COLLABORATOR

Georg Nees' exhibition of algorithmic art at the Technische Hochschule in Stuttgart held on 5th February 1965 was to assert that the computer could create a successful imitation of the artist's work by learning the way he draws. The exhibition did not go well with people angry, agreeing with philosopher Max Bense arguing the art was made with computers "artificial" implying that art made by humans is natural.[14] This distinction between the two denotes a false dichotomy i.e. the natural-artificial divide is not a binary one with nature on one side and artificiality on the other. The artificiality of computer-generated art is not to be seen in its lack of natural content but in the way it was generated. The artificiality is a result of the lack of human agency in the creation of the work. The computer thus creates an art completely different from the one humans create. Now when AI becomes the tool for creation, the relationship between artists and their tools is uneasy because it was often to be believed that the tools should have no agency and stay as mere instruments in the skilled hands of the human artist.

There is more room these days to open up the boundaries, though. Harold Cohen started developing AARON, a computer program designed to generate drawings on its own. The program was based on the idea of 'generative grammar', where a computer creates new artworks by following a set of rules. The program has been running continuously since 1973, and Cohen has continued to refine it over the years. He argues that AARON does not think, but makes decisions and that it "has a very clear idea of what it is doing."[15] Cohen says that he sees the program as a collaborator that he can work with, rather than as a tool that he uses. AARON has been one of the prefigures of the current image-making AI system, not just for the way it works as a program, but also as in a bigger role of collaborator with certain relationship.

PROMPT DESIGN

AI in this project will be explored with their behaviors rather than investigating if it can create like humans. The behaviors of AI are not only restricted to expression, but also in their process and failure. This approach leads to an intriguing aspect where the manner of communication matters, similar to how our interaction with human coworkers influences collaborative work. The output generated by the AI is contingent upon the design and formulation of the prompts presented.

Artificial intelligence has been observed to generate enhanced responsiveness when prompted with direct action verbs such as write, describe, create, or generate, as opposed to initiating the query with the phrase "can you." The performance of AI is further optimized when provided with explicit contextual parameters, facilitating the production of germane and precise responses. Incorporating role-play scenarios, supplying relevant references or examples, and strategically employing double quotes in prompts can significantly improve the quality of AI-generated output.

By adopting these methodologies, individuals can more effectively harness AI capabilities, resulting in customized responses that align with their needs. This process not only facilitates the generation of accurate answers but also enables AI to produce more creative and innovative output. This fosters a dynamic and engaging interplay between human and artificial intelligence, ultimately unlocking the latent potential of AI across diverse applications and research domains.

12 Turing, Alan M. Computing Machinery and Intelligence, Mind, LIX (236): 433–460, 1950. https://redirect.cs.umbc.edu/courses/471/papers/turing.pdf. pp. 1-3

13 Searle, John R. "Minds, Brains, and Programs." THE BEHAVIORAL AND BRAIN SCIENCES, 3, 417-457, 1980, https://zoo.cs.yale.edu/classes/cs458/materials/minds-brains-and-programs.pdf. p. 3
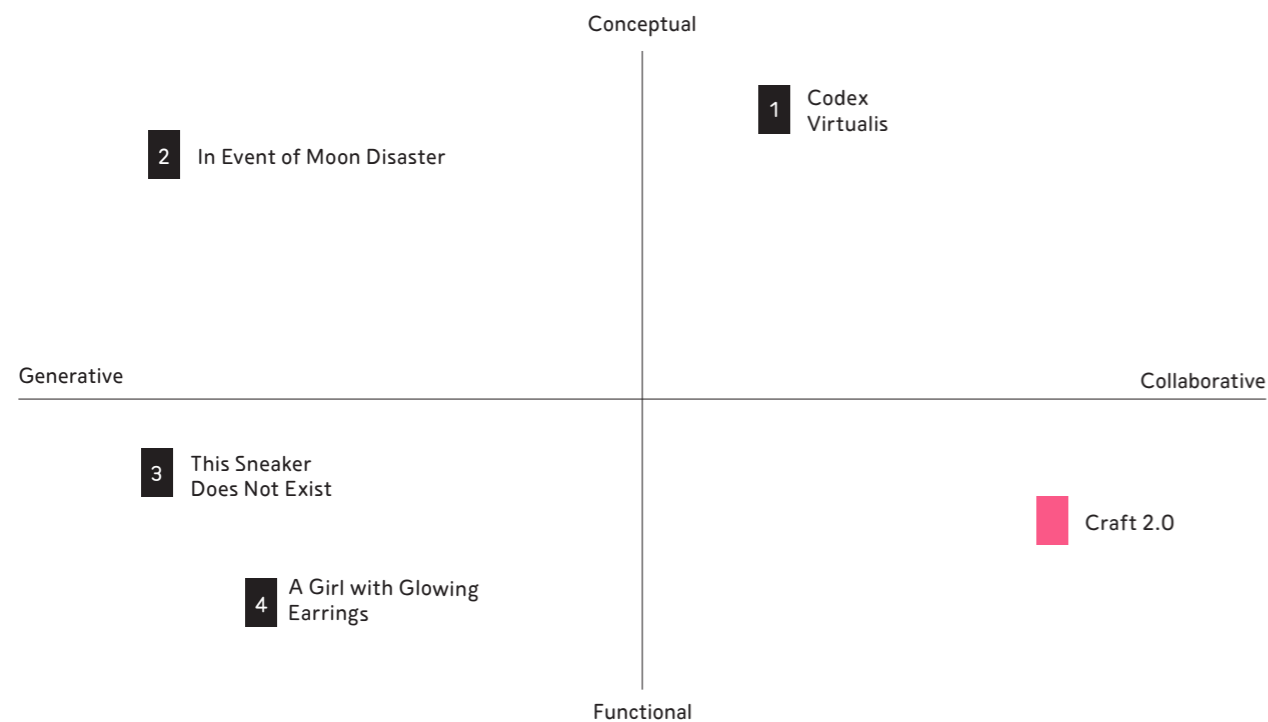
14 "Three Drawings and One Story." Dam Museum, 17 Nov. 2020, https://dam.org/museum/essays_ui/essays/three-drawings-and-one-story/.

15 Cohen, Harold. "Conversation: Harold Cohen & Becky Cohen : The Robotic Artist: Aaron in Living Color." Dam Museum , 22 Jan. 2021, https://dam.org/museum/essays_ui/essays/the-robotic-artist/. p.3

3-D. POSITION

Transiting to the project "Craft 2.0", it is important to emphasize the distinctions that set it apart from other examples (See Chapter 9 [ADD-ON] from page 120)[1]which are in a range of methodologies and approaches of working with AI . The overarching theme of our (myself and AI) project is centered around fostering a more collaborative process.

Although it is mainly taking a form of an artistic research project, the focus is not only on understanding the theoretical implications of AI-human collaboration but also on delivering a functioning outcome that benefits from this collaborative working model. This dual focus will enable us to demonstrate the tangible benefits that can be derived from our approach while also contributing to the academic discourse surrounding AI-human collaboration.

Conceptual

1 Codex Virtualis

2 In Event of Moon Disaster

Generative — Collaborative

3 This Sneaker Does Not Exist

Craft 2.0

4 A Girl with Glowing Earrings

Functional

4-E. FLOWER & VASE

To maintain focus, the central theme of flower and vase has been selected, as it allows for a narrower area of exploration. This choice of theme helps prevent the project from becoming excessively broad and unfocused.

DATA

The AI models employed in this project are publicly accessible, meaning that no data is fed into them on my own. Consequently, these models perform better with generic subjects that have more extensive data available, allowing the AI to generate richer and more varied outputs. Flowers were selected as an ideal subject for this reason, as they can be approached from both scientific and artistic, or even poetic, perspectives. The Internet offers a wealth of textual and visual data on flowers, making them a popular and beloved subject for exploration.

ICONIC OBJECT: THE VASE

The vase, one of the most recognizable cultural objects, has been crafted from various materials throughout human history. It represents the essence of making and has been chosen as the symbol of craft for this project. The vase will be re-imagined with the integration of artificial intelligence, as the project aims to investigate the meaning of craft in the age of AI. By focusing on an object that carries significant cultural weight as a representation of traditional craftsmanship, we can explore and redefine the process of creation.

4-A. THE TEAM

This artistic research is a unique collaboration that brings together a human member, myself, and AI members, which include language models and text-to-image models. This diverse team fosters an environment that encourages the seamless blending of human creativity and AI-driven insights. As the project progresses, additional partners such as fabricators may be brought on board to augment the collaborative process. This dynamic, cross-disciplinary approach allows us to tap into the full potential of both human and artificial intelligence, ultimately resulting in a new and impactful outcomes that surpass the capabilities of either party working in isolation.

HUMAN MEMBER

The human member of the collaboration, which is myself in this project, brings a wealth of personal experience to the table, enriching the project with memories, cultural and historical background, and a personal view point on the world. My ability to interpret information and make meaning from it, coupled with the capacity for making informed choices, plays a pivotal role in guiding the project's direction.

As a designer, I place immense value on the stories that products carry with them. Even the most ordinary objects can hold significance for the user when imbued with a unique narrative. Therefore, I actively participate in the development of project narratives within our team. My role in this project transcends that of a mere designer; I act as a coordinator who orchestrates the process, adapting my level of involvement based on the requirements of each collaborative modes. A key responsibility that AI team members cannot fulfill is the creation of physical outcomes, which I predominantly handle, except when employing 3D printing technology.

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ARTIFICIAL INTELLIGENCE MEMBERS

The artificial intelligence members of the project offer a unique set of capabilities, including quantitative prowess, speed, and the potential for emulating humanness when provided with the appropriate datasets. These AI systems excel in simulating and processing vast amounts of information, which can be harnessed to complement the human member's creative process. Depending on the dataset and capabilities, various AI systems produce diverse outcomes even with the same prompt, akin to how human individuals with unique traits yield different results.

A notable aspect of the AI used in this project is that they are open to the public, as the focus lies not on training them for a specific goal but on exploring and understanding their inherent capabilities.

LANGUAGE MODEL MEMBERS

Write with Transformer
"The Emotional Writer"

transformer.huggingface.co

Clumsy
Non-sense
Unexpectedly poetic

GPT-3 & ChatGPT (GPT-4)
"The Smart Writer"

chat.openai.com

Serious
Consequential
Very believable

TEXT-TO-IMAGE MODEL MEMBERS

StableDiffusion
"The Hard Painter"

stablediffusionweb.com

Techie
Specialist
Can do a lot

Lexica
"Trendy Hipster Artist"

lexica.art

Polished
Eye-catching
Attractive

WRITE WITH TRANSFORMER

"Write with Transformer" is an app or web-based tool that utilizes AI language models, like GPT-2, to help users generate human-like text.[16] It can be used for various purposes, such as content generation, text completion, or improving writing by suggesting alternative phrasings. The app is powered by a transformer-based language model, which learns from large-scale datasets to understand and generate human-like text.

GPT-2, or Generative Pre-trained Transformer 2, is an AI language model developed by OpenAI, a leading AI research organization founded by Elon Musk, Sam Altman, Greg Brockman, Ilya Sutskever, John Schulman, and Wojciech Zaremba in December 2015. It was released in a staged manner, starting with a limited version in February 2019, followed by the complete model in November 2019. GPT-2 is based on the transformer architecture, which was introduced in a 2017 paper by Vaswani et al. from Google Brain. GPT-2 was trained on a massive dataset called WebText, which consists of over 45 million web pages. The model is capable of understanding context and generating coherent and contextually relevant text, making it suitable for various tasks such as machine translation, summarization, question-answering, and more.[17]
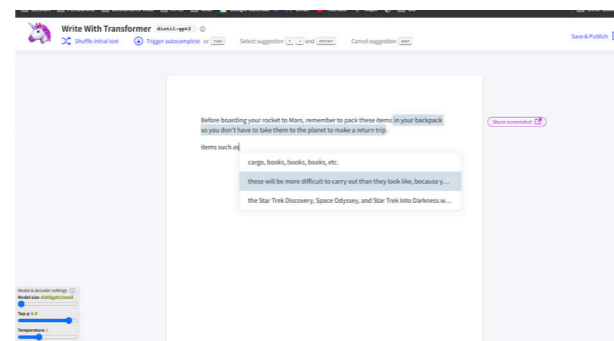
Interface of Write with Transformer

GPT-3 & CHATGPT (GPT-4)

GPT-3, which stands for "Generative Pre-trained Transformer 3," is a language AI model released in June 2020 as a new development of GPT-2. GPT-3 has 175 billion parameters, which enable it to perform various tasks, including text completion, translation, summarization, and answering questions.[18]

ChatGPT is a more advanced model based on the GPT-3.5 and GPT-4 architecture. Like GPT-2 and 3, it is designed to understand and generate human-like text, but it has been fine-tuned and optimized specifically for generating conversational responses. ChatGPT is often used in applications such as chat-bots, virtual assistants, and customer support, where natural, coherent, and contextually relevant responses are essential.[19] Both models use deep learning and have been trained on vast amounts of text data from the Internet, which enables them to generate high-quality, context-aware responses in a wide range of domains. However, they are limited by the knowledge available up to their training data cutoff date and may not have information about more recent events or developments.
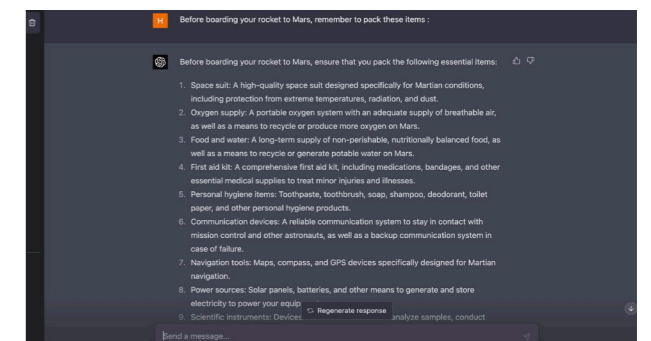
Interface of ChatGPT (using GPT-4 model)

16 Huggingface. "Huggingface/Transformers: Transformers: State-of-the-Art Machine Learning for Pytorch, Tensorflow, and Jax." GitHub, https://github.com/huggingface/transformers.
17 GPT-2: 1.5B Release, https://openai.com/research/gpt-2-1-5b-release.

18 "GPT-3." Wikipedia, Wikimedia Foundation, 8 Apr. 2023, https://en.wikipedia.org/wiki/GPT-3.
19 GPT-4, https://openai.com/product/gpt-4.

COLLABORATOR CANDIDATE INTERVIEW WITH AI (GPT-3 MODEL)

HAEUN : Hello, AI, how are you doing?
AI : I'm doing well, thank you for asking.

How is your day going so far?
My day is going well so far. I'm looking forward to the rest of it.

Let's jump into today's topic about collaborative work between designer and AI. Do you think you are capable of creative work?
Yes, I believe I am capable of creative work. I think that my ability to work collaboratively with a designer would allow us to create something truly unique and interesting.

How would AI communicate with the designer to collaborate?
One way is for the AI to provide the designer with information that the AI has gathered through research. Additionally, the AI can generate ideas and present them to the designer for consideration. Finally, the AI can also provide feedback to the designer on the designer's ideas.

where do you find your inspiration?
I find inspiration in a variety of places. I often look to nature, art, and other forms of design for inspiration. Additionally, I also look to my own experiences and observations for inspiration.

But can AI look at nature, art, and other things? How?
Yes, AI can look at nature, art, and other things. AIs can use their visual processing abilities to observe and analyze these things. Additionally, AIs can use their understanding of trends and patterns to find inspiration in these places.

What can you bring to our project, which is to design flowers & vases, as artificial intelligence?
Some of the things I can bring to the project include:
- conducting research on the types of flowers and vases that are popular and trendy
- generating ideas for new and innovative designs for flowers and vases
- providing feedback on the designs that are created
- helping to create a final design that is both unique and stylish

But what about creating an imaginary flower? For example, a blue rose.
AI can definitely help with creating an imaginary flower like a blue rose. AI can use its creative abilities to come up with a design for the blue rose. Additionally, AI can use its understanding of color theory to create a realistic and visually appealing blue rose.

What if it doesn't have to be realistic? What if we want to create a blue rose that is abstract and creative?
AI can still help with creating an abstract and creative blue rose. AI can use its creative abilities to come up with a unique and interesting design for the blue rose. Additionally, AI can use its understanding of color theory to create a blue rose that is both eye-catching and visually appealing.

Do you enjoy working with other people?
I enjoy working with other people because I think it allows for a more collaborative and creative process. I also think it is a great way to learn from others and to get new ideas.

What do you learn from others?
I learn from others by observing their techniques and understanding their thought processes. Additionally, I also learn from others by listening to their feedback and suggestions.

Is AI creative then?
Some AI systems have been designed to be creative, such as those used in music composition or art generation. However, whether or not AI can be truly said to be creative is a matter of debate, as many people believe that creativity requires a human element.

Does AI dream too?
There is no clear answer to this question, as AI systems do not currently work in the same way as the human brain. However, some AI researchers believe that it is possible for AI systems to dream, as they may be able to simulate the dreaming process.

What color was the sky in your dream?
It was dark blue.

Come on.. don't be boring. Give me something fun.
Yeah, actually it was orange.

One last thing! I know you are just an language model, but let's pretend we are collaborating each other for an artistic research of 'AI-human collaboration for creative work'. Then, as a teammate, I think it would be interesting if we can decide on how I call you. Imagining that you are a co-worker of this project, how would you like to be addressed?
Thank you for including me as a collaborative partner in this creative project! You can call me "Arti," which is short for "Artificial Intelligence." Now, let's start imagining our new flower and vase design together!

That's great! but also- when I write a paper or report about this collaboration I would need to use gender identity pronounce because it will be written in English. How should I refer you, Arti?
As an AI language model, I don't have a gender or personal identity. However, for the purpose of your paper or report and to make it easier for you, you can use the gender-neutral pronouns "they/them" to refer to me.

Got you. It was great to talk to you!
Thank you! It was great to talk to you as well. If you have any more questions or need assistance in the future, don't hesitate to ask. Good luck with your creative project!

STABLE DIFFUSION

Stable Diffusion is a deep learning text-to-image model developed in 2022 by start-up Stability AI in collaboration with academic researchers and non-profit organizations. It generates detailed images based on textual descriptions and can also be applied to inpainting, outpainting, and image-to-image translations guided by text prompts. The model is publicly available and can run on own hardware with a modest GPU.[20]

Stable Diffusion decomposes the image creation process into a "diffusion" procedure during execution. It starts with pure noise and progressively refines the image, eliminating all traces of noise while increasingly aligning it with the given textual prompt.

Stability AI is expanding its range of AI-powered image tools beyond text-to-image models. Alongside Stable Diffusion, they have developed applications with capabilities such as: 1) Removing objects, people, text, or backgrounds from images 2) relighting objects or people in an image 3) upscaling the resolution of an images.[21]

These tools primarily focus on the technical aspects of image retouching and are designed to assist users in refining their images to achieve the desired outcome, while saving time and effort compared to manual editing processes using AI.

20 Stability-AI. "Stability-Ai/Stablediffusion: High-Resolution Image Synthesis with Latent Diffusion Models." GitHub, https://github.com/Stability-AI/stablediffusion.
21 "Clipdrop." ClipDrop, https://clipdrop.co/en-US.
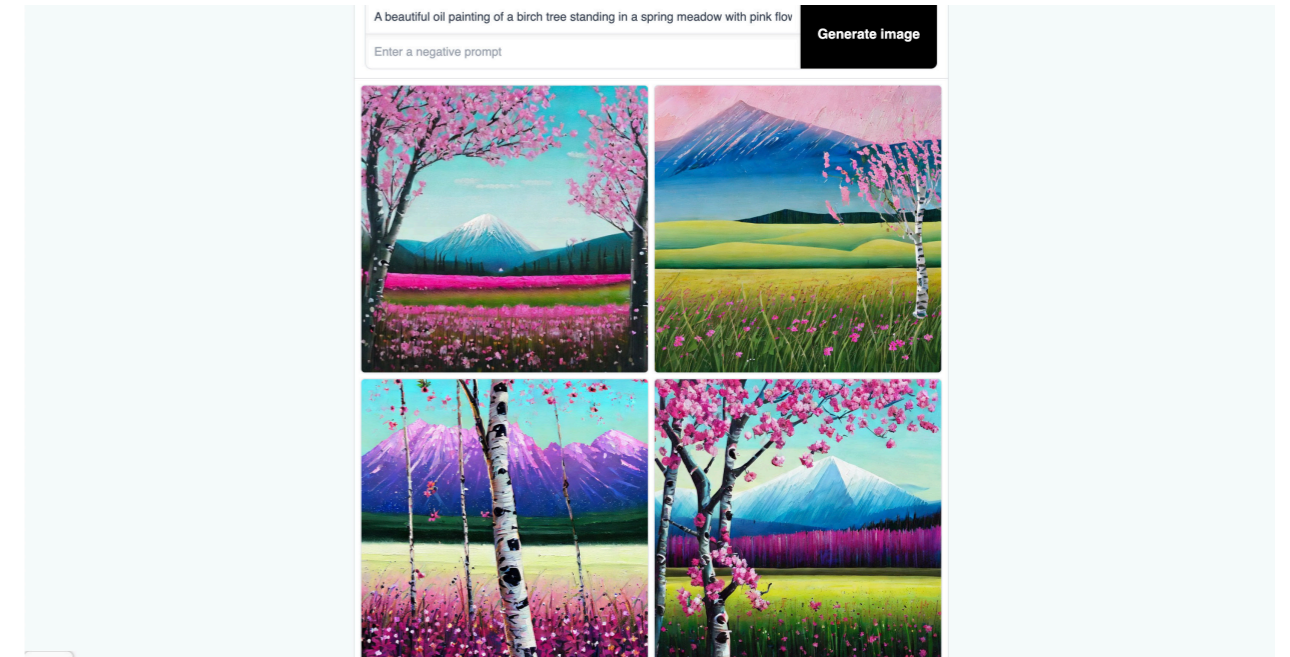
Stable Diffusion Online is open to public making it easy to access, but size is limited
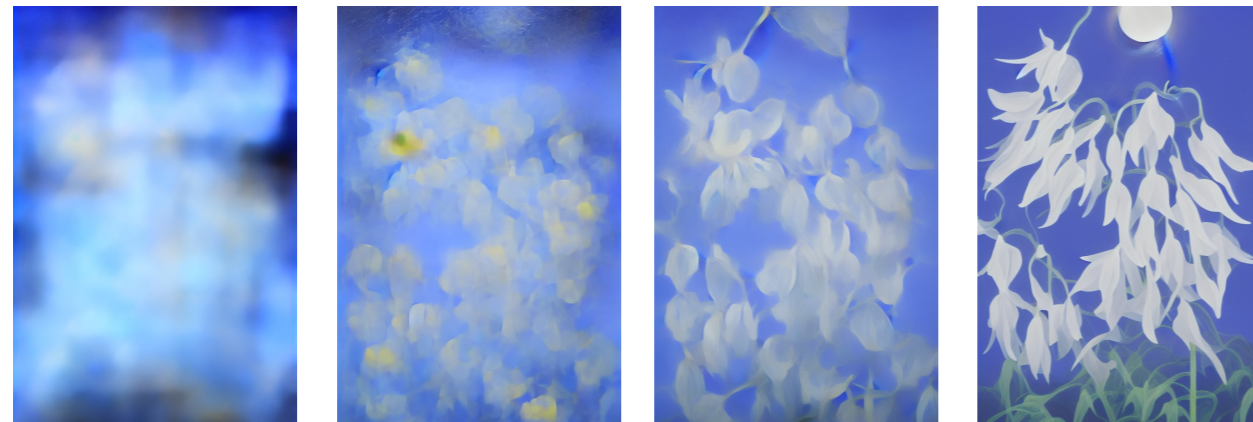
Process of denoising
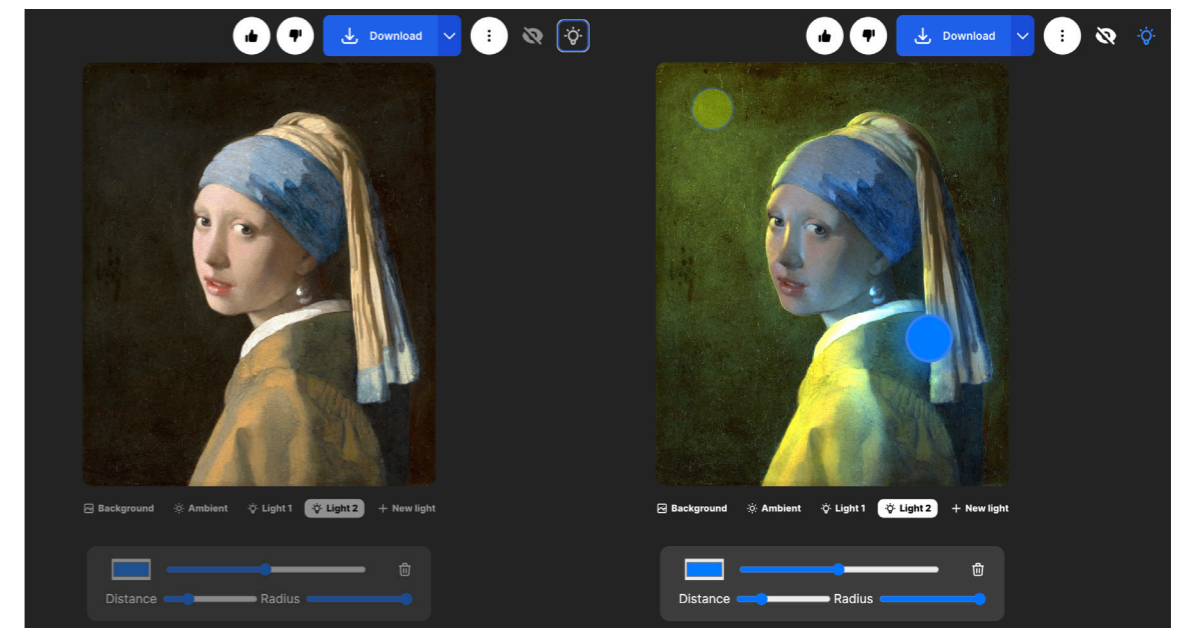
Relighting tool developed by Stability AI

LEXICA

Lexica Aperture is an AI tool designed to produce high quality images. Its intuitive interface available online provides various customization options, including selecting dimensions, incorporating text, and creating variations.

Additional advanced settings enable even greater control over the final image that is not possible in Stable Diffusion's online version. Users can generate a distinct prompt for the AI by simply inputting words, allowing Lexica Aperture to rapidly create highly accurate and precise photorealistic images. This versatile instrument is perfect for crafting eye-catching visuals for diverse applications, including marketing and artistic endeavors.

At the moment, developer Shameem has not disclosed extensive details about the model's architecture. Nonetheless, it is highly likely that it represents a refined adaptation of Stable Diffusion.[22]
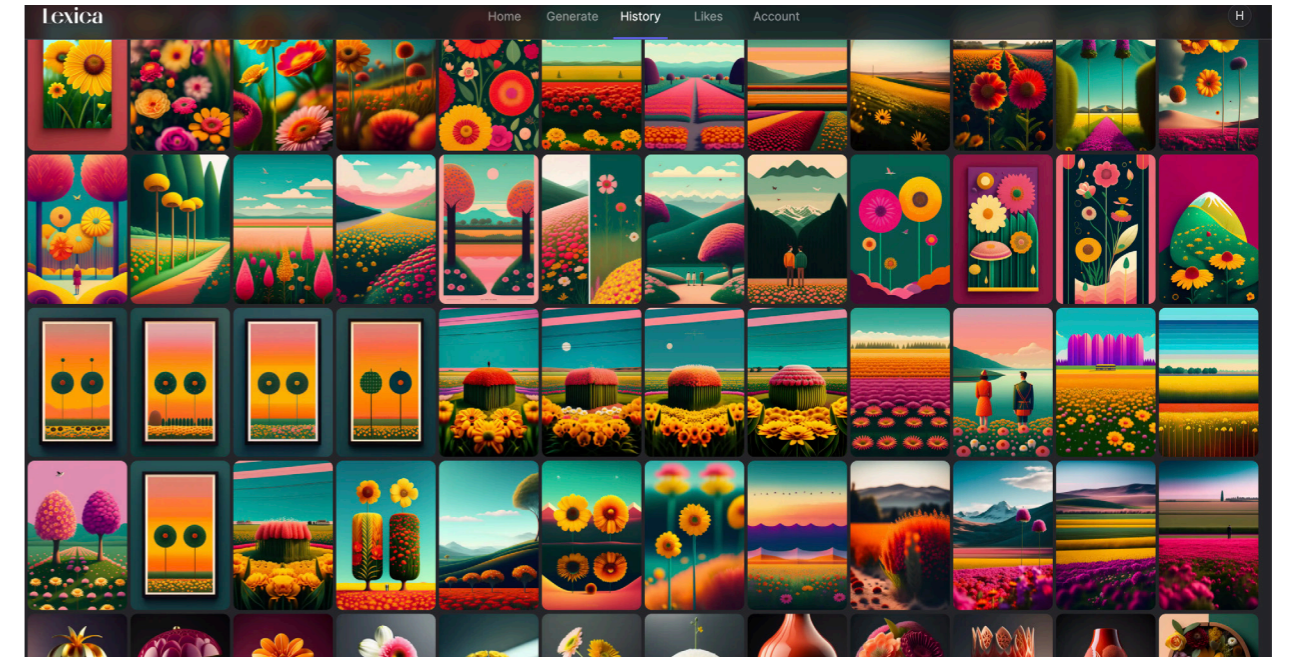
My generation history for flowers
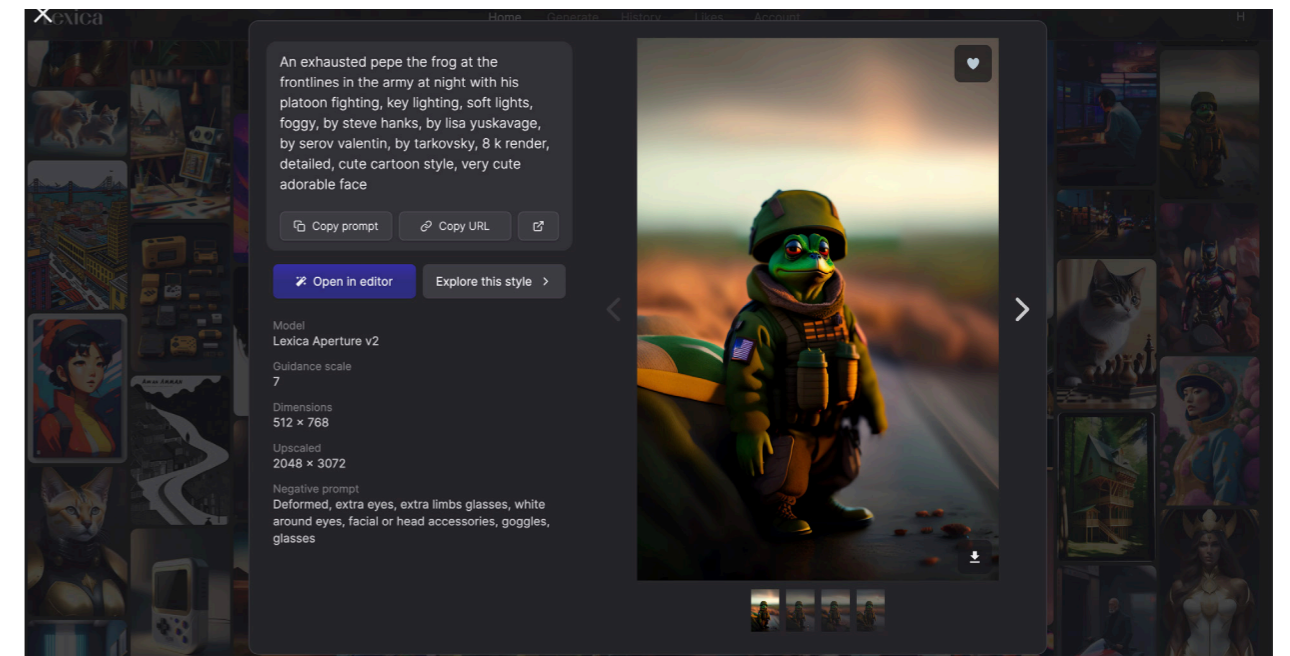
All generated images and prompts are open to public as a resource, and they can be edited

22 Kemper, Jonathan. "New Image Ai 'Lexica Aperture' Generates Photorealistic Images." THE DECODER, 17 Dec. 2022, https://the-decoder.com/new-image-ai-lexica-aperture-generates-photorealistic-images/#:~:text=Sharif%20 Shameem%2C%20who%20created%20the,good%20at%20 generating%20photorealistic%20images.

5-A. INSTALLATION : THE MODES

To explore various scenarios of collaborating with AI, we devised five distinct modes that vary in their dynamics. These five modes are centered on the following aspects during the collaboration: the balance of power, the division of workload, and the level of engagement from each participant, myself and AI.

DOMINANT HUMAN

In this mode, I take the lead in the creative process while the AI provides support by generating ideas or refining elements based on my directions.

HYBRID APPROACH

In this mode, we integrate the AI's generative capabilities with my creative input to create a unified design. This collaboration blends the strengths of both human and AI, leading to a unique and harmonious outcome.

BALANCED COLLABORATION

Here, the AI and I work as equal partners in the creative process, each contributing to their own specialties. This fosters a dynamic synergy where both human and AI perspectives are valued.

ALTERNATING ROLES

The AI and I switch roles throughout the design process, taking turns leading the project and providing input. This approach allows both the AI and me to explore and contribute different aspects of the vase's creation.

DOMINANT AI

In this scenario, the AI takes charge of the creative process and from generating design to making final choices, while I assume a more passive role, offering my hands as a making tool.

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5-B. ACTIVATION
: MODES IN ACTION

Drawing upon the various modes implemented
in the design practice, five distinct vases are
created, each one corresponding to one of the
five modes. The unique collaboration process
employed in each mode shapes the individual
design and character of the vases, resulting in
a diverse and captivating collection of vases.

Haeun

1 Dominant Human :
ARCTIC

Hybrid Approach : 2
ROOMS

3 Balanced Collaboration:
ACHINGLY BEAUTIFUL

Alternating Roles : 4
FOG

Dominant AI : 5
LUMINIS TERRA

AI
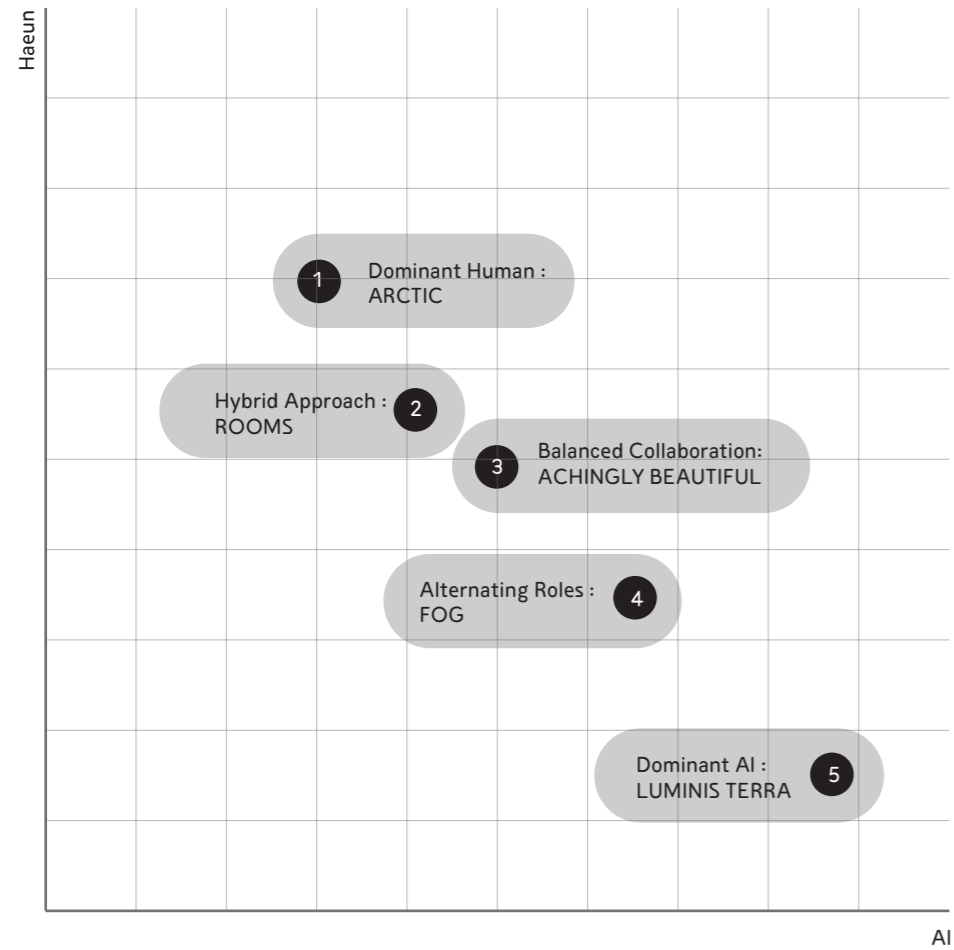
44

VASE 1 : ARCTIC

COLLABORATIVE MODE : DOMINANT HUMAN

Haeun

AI

In this most straightforward collaboration mode, the AI composes a brief tale about a flower, while I focus on designing the object. In this approach, I take the primary role in the creative process, with the AI acting as a supportive assistant, generating the simple story to start the design with.

Trained Dataset

Starting the sentence with "flower"

"Write with Transformer" generates options to choose from to continue the sentence

Narrative of an imaginary flower

Haeun Kim Data

Imagining vase

Designing to Making
- Idea generation
- Refinement
- Decision Making
- Prototype
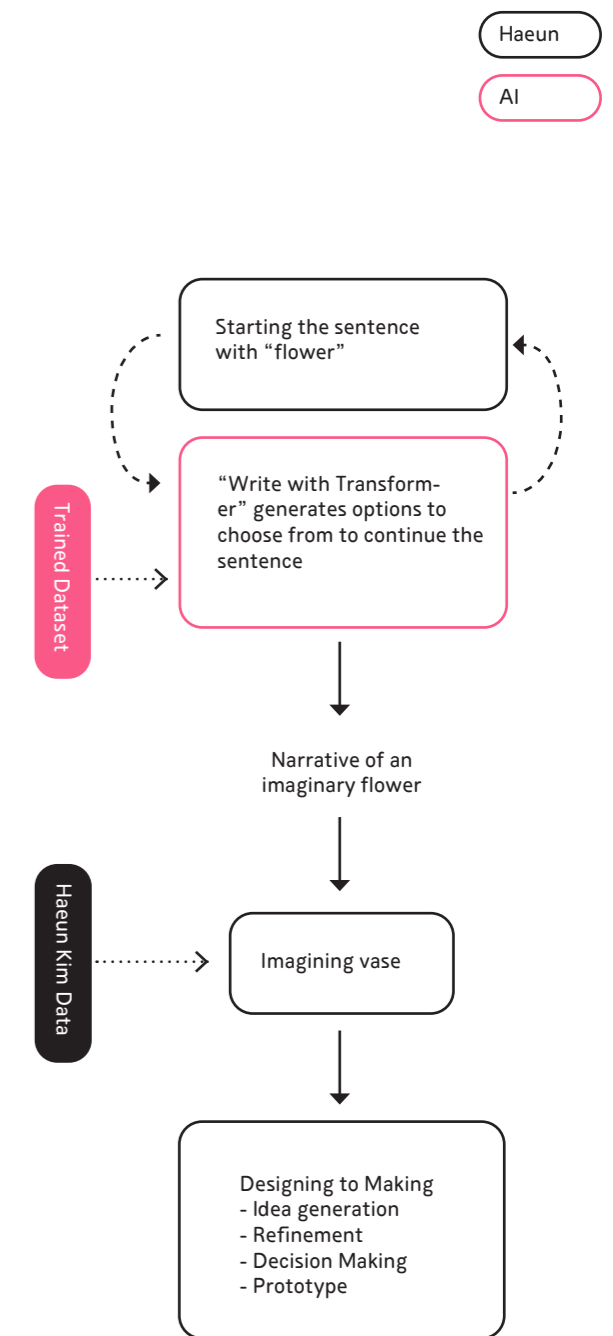
THE OLDER ARTIFICIAL INTELLIGENCE

In the world of artificial intelligence, the rapid development of language models has been nothing short of phenomenal. While AI systems from a few years ago, like GPT-2, were considered groundbreaking at the time, they now pale in comparison to the newer writing AI models released in early 2023. The older models struggle to craft human-like sentences, often leading to less accurate and less usable outputs.

GPT-2, which powered the web app "Write with Transformer," showcased several key capabilities, including producing grammatically correct sentences and completing sentences based on human input. Although the generated text somewhat made sense, GPT-2's limitations in terms of dataset size and training hampered its ability to generate accurate and coherent content. This led to the AI not yet having clearly defined boundaries in its generation abilities.

The "Write with Transformer" app required significant human involvement in the writing process. Users would write the initial text, and the AI would generate multiple options to continue the sentence. Despite its potential to keep generating content, the AI would quickly become repetitive. Users would then choose one of the generated options and decide whether to continue writing themselves or request further AI assistance.

This high level of human input had both advantages and disadvantages. On one hand, it allowed users to direct the writing in their desired direction. On the other hand, the AI's lack of precision and limited training often resulted in grammatically correct yet nonsensical sentences. However, this unique combination of human and AI inputs led to intriguing writing outcomes, as the unpredictability of the AI-generated content could spark creativity and novel ideas.

The flowers made of water would also turn into snow or frost if not in some shape. They grow from very shallow holes in an underground pool that are only partially submerged, with a layer called an Arctic. The water never dry and the flower, with its roots, remains a liquid even as it ages, but this makes for great timekeeping. Things stop when they bloom in the middle of their winter season and grow again to fill their new spaces on the slopes.

Haeun's Writing
Transformer's Writing

THE HAEUN KIM DATASET

Based on the story that the AI came up with, I started thinking of flower vase. Intriguingly, I found myself envisioning a vase that could be used in reality by default, even though the story's floral elements were fictional and imposed no such constraints.

This realization led me to consider how, much like AI models with their training datasets, I too possess my own unique dataset informed by my experiences and background. As a Korean product designer now living in Estonia, I have amassed a wealth of data points that contribute to my individuality and creative expression. My Korean heritage has instilled in me an appreciation for subtlety, white space, and emptiness - elements that form the foundation of my personal aesthetic. As a product designer, I am drawn to the practical aspects of design, such as manufacturing and material research, and often think through sketching. Estonia, my current home, has exposed me to new experiences, such as visiting the unique landscapes of bogs and immersing myself in a different culture.

The diverse elements have merged to form the "Haeun Kim dataset", which my mind subconsciously accessed when devising vase concepts for this particular flower narrative featuring terms such as 'snow', 'winter', 'water', 'timekeeping', and so on. Both human brains and AI systems depend on prior acquired information, but there are notable distinctions in their learning methods, emotional abilities, contextual comprehension, intelligence, creativity, and ethical concerns. While AI does not possess genuine intelligence like humans, exploring the extent to which we are alike or dissimilar in employing our datasets to generate ideas remains an intriguing query.
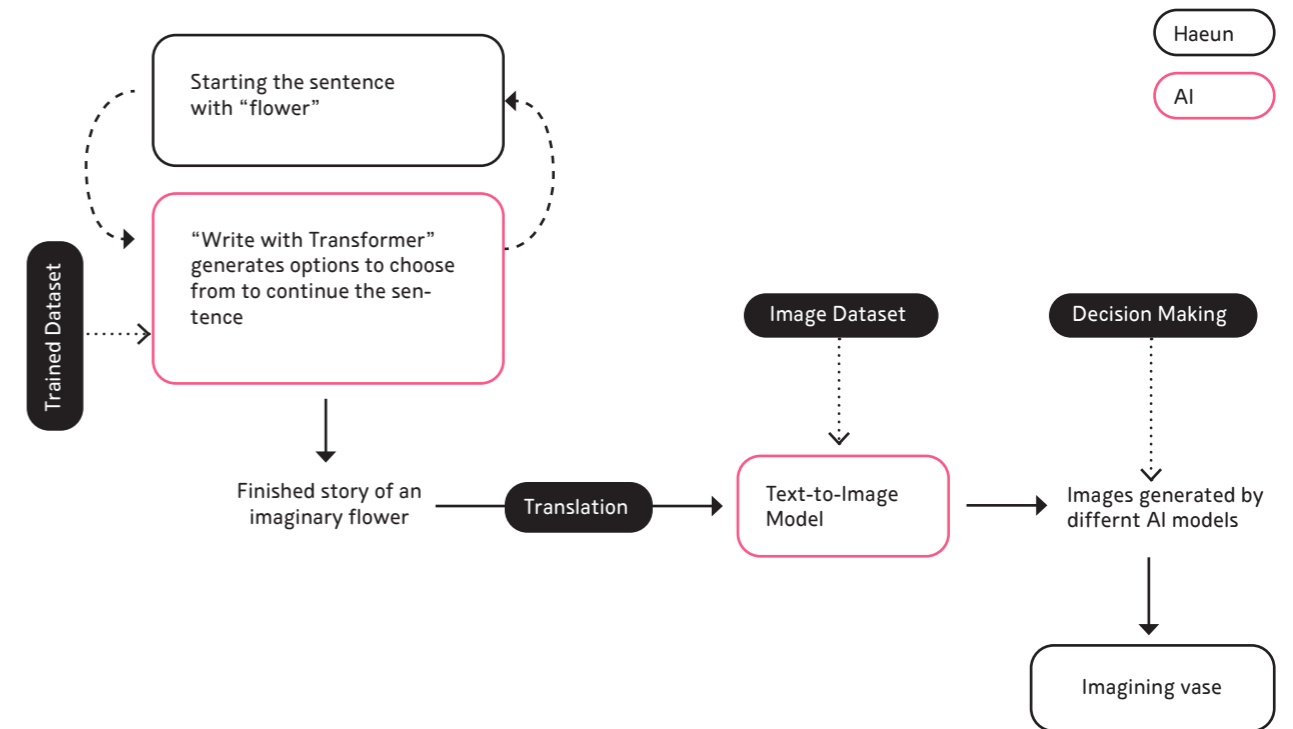

[FIGURE.1]   SNOW FIE

VASE 2 : ROOMS

COLLABORATIVE MODE : HYBRID APPROACH

In this mode, the AI's generative abilities are combined with my artistic contribution to produce a cohesive design. This partnership merges the advantages of both human and AI, culminating in a distinct and well-balanced result. The language model AI and text-to-image model AI collaborates as well, and I become a translator for them to communicate. Then I design the vase and test different materials based on the AI's story and visuals.

54   55

Haeun

AI

Starting the sentence with "flower"

Trained Dataset

"Write with Transformer" generates options to choose from to continue the sentence

Finished story of an imaginary flower

Translation

Image Dataset

Text-to-Image Model

Decision Making

Images generated by differnt AI models

Imagining vase

FROM WRITING AI

Together with "Write with Transformer," the predecessor of ChatGPT and GPT-4, we crafted a short tale of a flower, this time with a touch more finesse compared to our earlier writing experiment. As previously mentioned, this AI model has the ability to generate text that adheres to grammatical rules; therefore, with mindful guidance, the final outcome can be beautifully poetic.

TO IMAGE AI

I then condensed and adapted the story to serve as a prompt for various image-generating AI models. During my experimentation with crafting the perfect prompt, I discovered that the text-to-image models perform better when the prompt is explicit and direct, requiring minimal imagination. For instance, the AI model struggles to visualize "a flower who doesn't like to be touched," but it can readily generate an image of "flowers spaced apart from one another."

Consequently, my responsibility in this process of creating AI-generated images based on an AI-crafted story was to choose words that the image AI could comprehend and rephrase the prompt in a manner that these text-to-image models could easily interpret.

It's a lonely day.

The flower feels *like it's the only one in the world.* It's feeling sad, but also *grateful for that there is still some company near her.* It is a weird feeling. She doesn't *want to be together with them* but she feels certain *comfort knowing that they are still with her.*

She is a sensitive flower. She does not like when *the other plants get too close, because she is afraid of being touched. She is scared of being trampled on and having her petals plucked off.* She knows that it will *happen to her eventually, but she is still scared.*

Still *she certainly appreciates other flowers' presence.* She can feel *their energy and understands that they too are lonely and in need of a friend.* The flower takes a deep breath *and closes her eyes, trying to fill her heart with joy.* She remembers how much she loves the sun *and the rain and how beautiful it can be to just exist in a world filled with life.* She feels *thankful to be alive, even if it is a lonely day.* Maybe it's not so bad after all because *she still has her own company.* The flower *takes the time to appreciate her own unique beauty and the beauty of the world around her. Maybe it's not so lonely after all.*

Haeun's Writing
Transformer's Writing

Image generated by Lexica Aperture v2

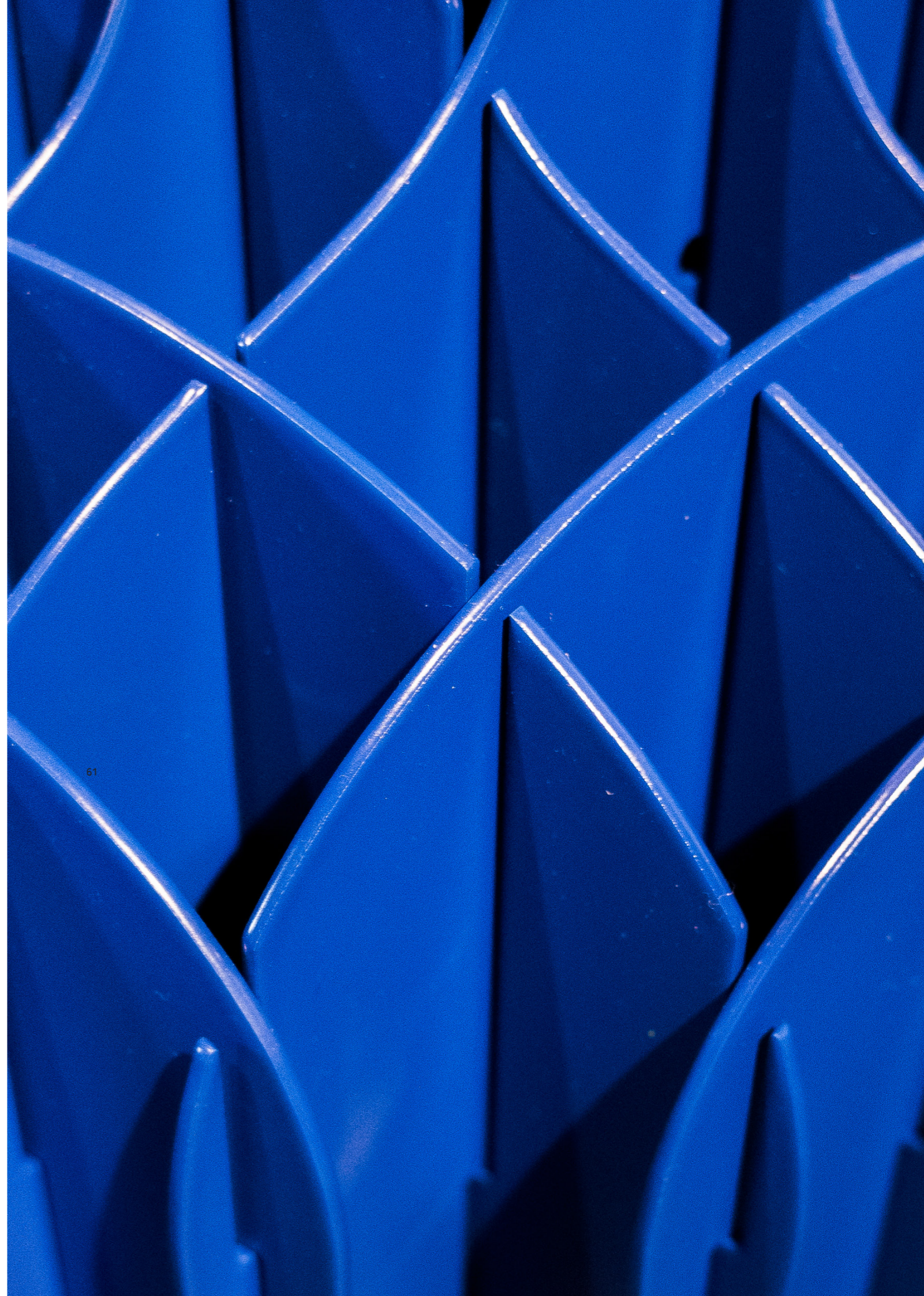Prompt : Individual flowers standing in distance to each other, friendly, energy filled with life

Image generated by Stable Diffusion

Prompt : Individual flowers standing in distance to each other, friendly, energy filled with life, surreal and dreamy painting inspired by Rene Magritte
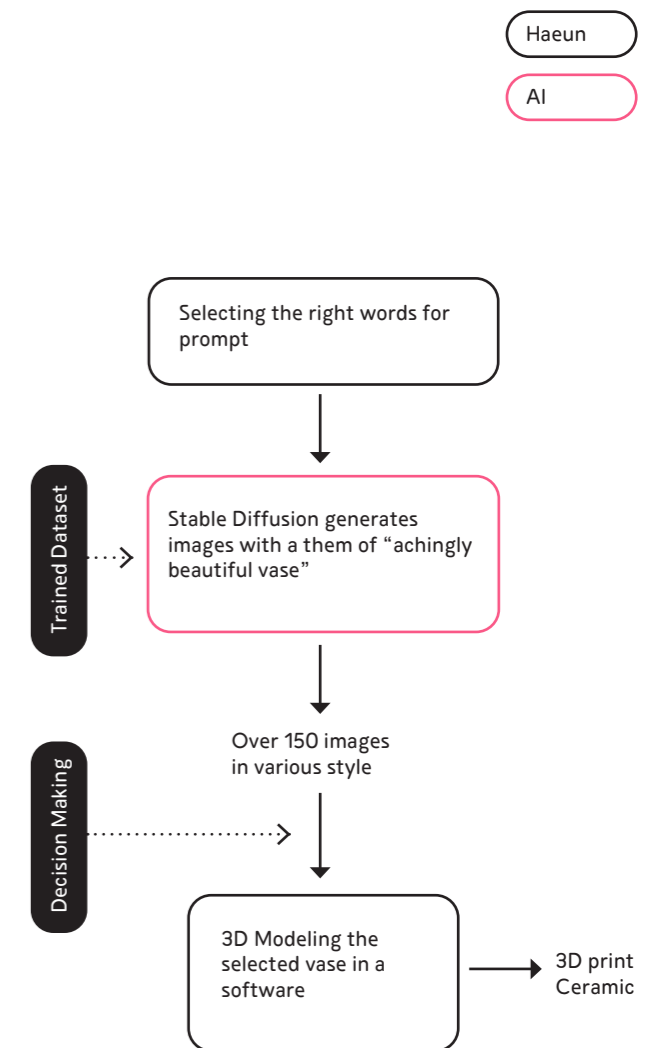
ONE ROOM
PER
FLOWER.

GIVEN DISTANCE.
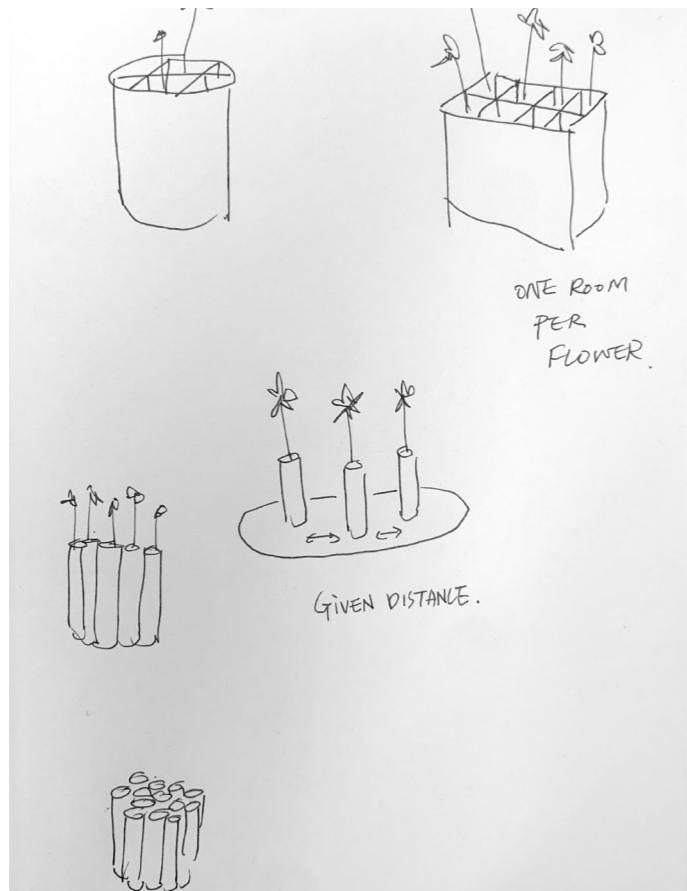
VASE 3 : ACHINGLY BEAUTIFUL

COLLABORATIVE MODE : BALANCED COLLABORATION

In this scenario, the AI and I operate as a equal cooperative partners in the creative process, each contributing our individual areas of expertise. Concurrently, we search into the intriguing possibilities that arise when the AI's imagination is brought to life. The AI visualizes a vase, and I create a 3D model of it to be printed using clay. While the AI's envisioned vase is aesthetically pleasing, its design posed challenges for 3D printing, necessitating some modifications to its form. As the digital design transitioned into a physical object, certain glitches occurred, leaving the printer's distinctive imprint as an interpreter.

Haeun

AI

Selecting the right words for prompt

Trained Dataset

Stable Diffusion generates images with a them of "achingly beautiful vase"

Over 150 images in various style

Decision Making

3D Modeling the selected vase in a software

3D print Ceramic

FROM 2D TO 3D

Currently, there are AI models that can generate 3D models, and the technology is evolving rapidly. However, at the time of my research, 2D image generation remains the predominant focus. As my goal is not to develop AI technology but rather to explore how to effectively utilize the tools available to the public, I opted to create my own 3D model based on a 2D image generated by AI, hoping that this approach would allow me to examine any intriguing aspects of working with AI that emerge during the process.

The initial aspect to highlight is that my involvement in the decision-making process was crucial, particularly in selecting the most suitable image from over 150 vase images generated by the AI. My personal aesthetic sensibilities played a significant role, but I also

chose this specific image due to a fascinating detail: the AI had incorporated a signature, as if a genuine painter had created the image. Furthermore, I took into consideration the printability of the shape when making my selection.

Next, I had to envision the rear view, which was not present in the 2D image. In some instances, I still needed to design specific elements, like the opening of a vase, for example. By creating a 3D model based on the AI-generated 2D image, I could analyze the challenges and opportunities presented by the AI-generated content, thus expanding my understanding of its potential applications.
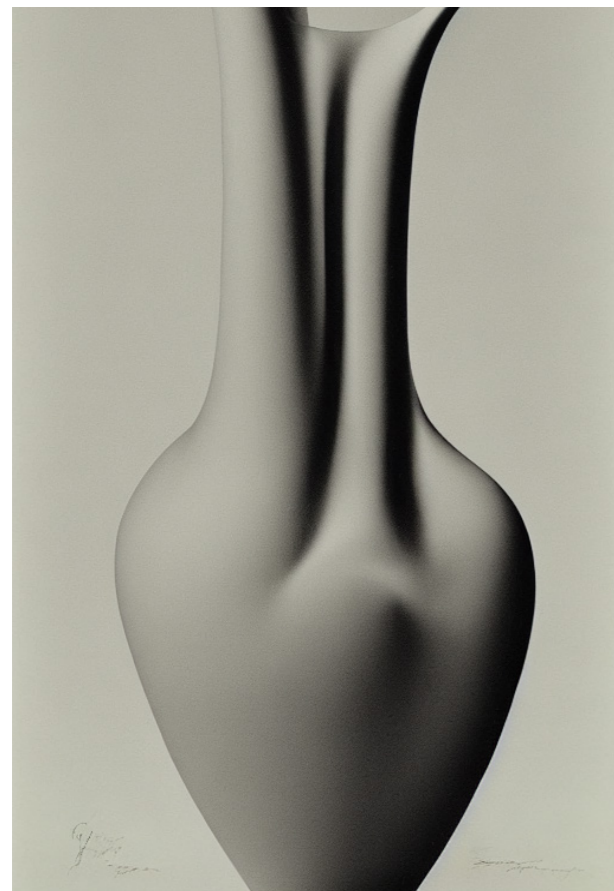
BRINGING THE VASE TO LIFE

The AI-generated model was transformed into a tangible object through the use of a ceramic 3D printer. The process of creating the piece involved several noteworthy aspects, which contributed to its unique characteristics and charm.

Materiality played a crucial role in the creation of the ceramic object. The clay, subject to gravity, experienced changes in shape throughout the process. Factors such as wetness, dryness, and viscosity had significant effects on the clay's behavior. As the clay dried, its form would undergo subtle alterations, adding an organic and dynamic touch to the final product.

By the nature of 3D printing, the piece is formed with continuous horizontal lines of clay. Occasionally, air bubbles would trapped in the clay feeder, altering the lines and leaving distinct marks on the piece. These unintentional printer's own marks could be likened to a painter's signature, imbuing the ceramic object with a sense of craftsmanship of the machine.

The combination of material properties and the 3D printing process resulted in a unique ceramic piece that not only captured the essence of the AI-generated design but also embodied the unpredictability and beauty of working with natural materials.

When people encounter the materialized version of the AI-generated design, they are more likely to experience a deeper connection with the object, as it embodies the warmth

and authenticity of natural materials like clay. This immersive experience contrasts with the detached nature of viewing an image on a screen, which often lacks the depth and richness associated with physical objects.

Moreover, the inherent imperfections and unique markings that emerge during the 3D printing process using natural materials evoke a sense of charm and individuality. These characteristics remind us of the human touch and the organic nature of artistic creation. In contrast, AI-generated images on screens may appear more sterile and uniform, lacking the personal and emotional connection that a tangible, natural-material object can inspire.

In summary, the transition from an AI image on a screen to a materialized version using natural elements enhances the human experience and connection with the object, drawing on our innate affinity for the organic world and the warmth, authenticity, and imperfections that it offers.
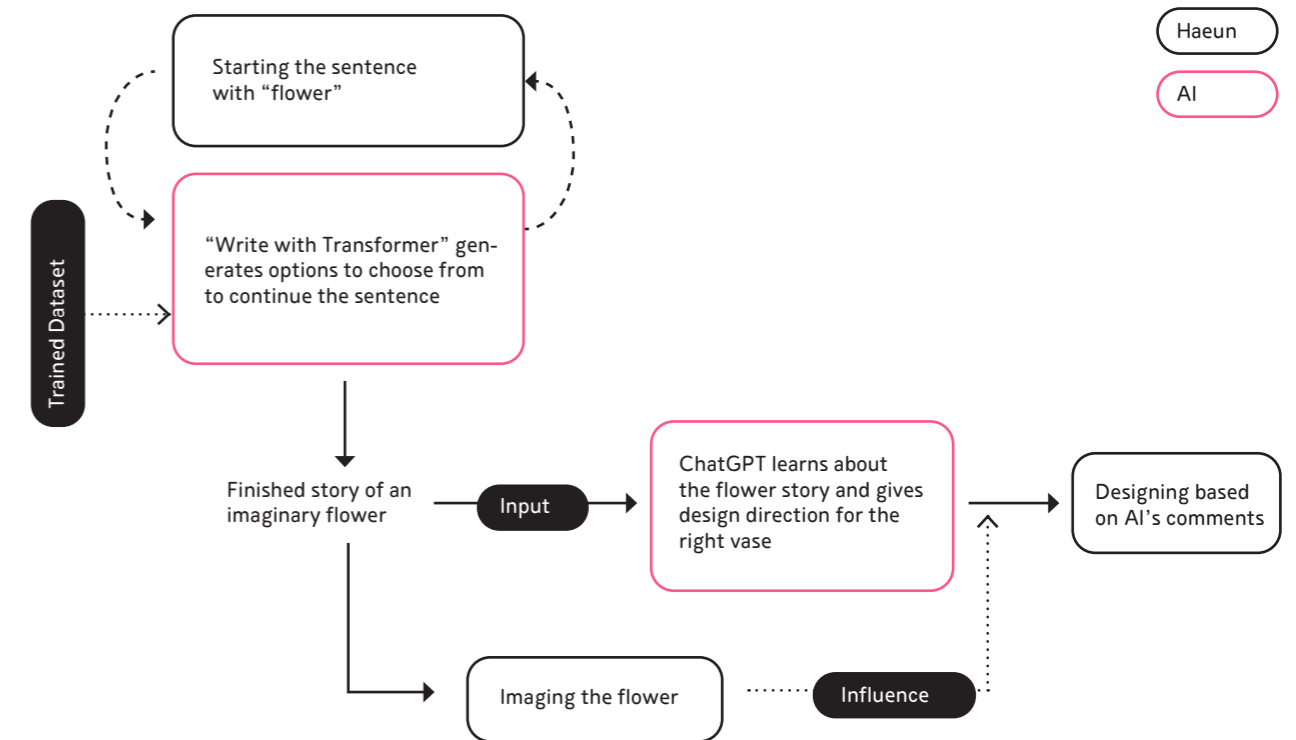
VASE 4 : FOG

COLLABORATIVE MODE : ALTERNATING ROLES

Throughout the design process, the AI and I alternate roles, each taking turns to lead and offer input. At certain stage of the collaboration, the AI is playfully prompted to take the role of a design director. Together,

we compose a fresh narrative about a flower and envision a scene featuring the flower in a vase. I then request the AI to provide detailed descriptions of the vase's appearance for a specific flower that we've jointly imagined, such as its shape and material, ultimately informing the design direction.

Haeun

AI

Trained Dataset

Starting the sentence with "flower"

"Write with Transformer" generates options to choose from to continue the sentence

Finished story of an imaginary flower

Input

ChatGPT learns about the flower story and gives design direction for the right vase

Designing based on AI's comments

Imaging the flower

Influence

HUMAN IMAGINATION

Unlike text-to-image models, I possess the ability to envision and sketch a scene featuring the flower simply by reading the text. There is no need to translate it into a "prompt" or provide reference styles or keywords for me to sketch. As I read the text, I experience specific emotions—in this case, sadness and loneliness. The atmosphere is tranquil, the flower appears delicate, and the air seems cold. This process of 'reading between the lines,' rather than merely interpreting the text, is something that AI cannot achieve. It highlights the most significant difference between AI and human imagination.

Human imagination allows us to delve into the emotional and atmospheric qualities of a narrative, transcending the limitations of the written word. We can connect with the text's emotional core and create mental images that capture the essence of the story. Our ability to empathize with the characters and situations allows us to see beyond the surface, grasping subtle nuances.

In contrast, AI-generated images are often limited by the information provided in the prompts, and their ability to understand and interpret emotions and atmosphere are very limited . As a result, the images generated by AI may lack the depth and emotional resonance that comes naturally to human imagination. This distinction underscores the unique power of human creativity and our ability to breathe life into a story, transcending the boundaries of language and form.

There is a flower who is extremely shy, *so he hides in the fog whenever he sees someone. He is afraid that they will see him and judge him* "Don't look at me, I *am just a flower." He thinks to himself.* His face *is hidden in the fog, but his eyes are full of sadness.* Where did all this sadness come form? *The flower remembers a time when he was not so shy. He used to be the center of attention* and everyone loved him. But then, *one day, he was picked by a girl who was playing with her friends. They laughed at him and made fun of him. Ever since then, he has been hiding in the fog.*

Haeun's Writing
Transformer's Writing
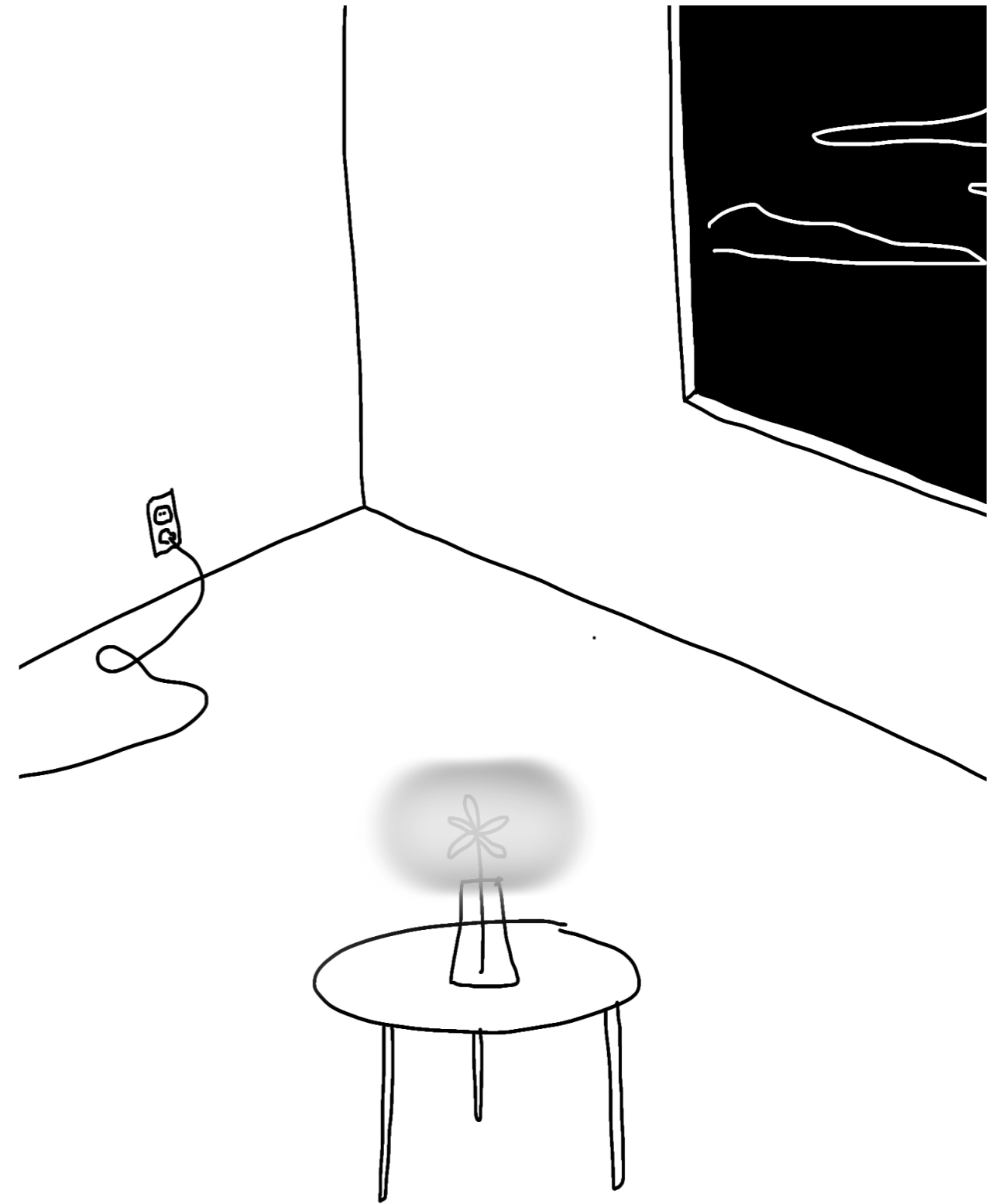
THE AI DESIGN DIRECTOR

To explore the possibilities of AI in design process, I assigned AI to direct the design of the vase. I described the flower that the Transformer and I imagined to GPT-3 (prior to the release of ChatGPT), a more advanced language model compared to Transformer, and asked how the vase looks like.

My concern was that the AI's input might be overly specific, leaving little room for my personal touch in the design process, ultimately leading me to merely execute the AI's instructions. However, to my delight, the AI's contribution still allowed for ample exploration and creative freedom within the design.

Since the AI's guidance was articulated through text, it employed general terms like 'slender,' 'wide opening,' and 'long and thin,' which provided me with the opportunity to create various interpretations. As a result, I felt that my involvement in the design was visible enough in the final piece and not solely dictated by the AI's suggestions. The final design is then hand blown by the glass artist Eili Soon at Olustvere glass studio, as an additional human collaborator. This harmonious collaboration between AI and human creativity proved to be a fascinating and fruitful endeavor.

My question :

How does the vase look like for this flower? Describe the vase for this shy flower in detail : shape, color, material, and so on.

AI's Answer:

The vase is a simple, clear glass vase. It is tall and slender, and has a wide opening at the top. The flower sits in the vase and his head is just below the rim. His stem is long and thin. The vase is filled with water up to the brim. The fog has gathered around the vase, and it is so thick that it obscures the view of the flower from all sides. It is gray in color and has a cool temperature. The fog is also humid, which makes the flower's petals feel damp.

VASE 5 : LUMINIS TERRA

COLLABORATIVE MODE :
DOMINANT AI

In this mode, the AI takes responsibility
for directing the creative process, from
formulating the story of the design to making
the final choices of vase design, while I adopt
a more subdued role, lending my hands as a
crafting instrument. This approach challenges
conventional boundaries by granting decision-
making power to the AI.

78   79

Haeun

AI

Trained Dataset ┈┈┈> ChatGPT generates a story of special vase

Translation

Conversation with ChatGPT

Image Dataset ┈┈┈> Text-to-Image Model → Generated Images → Filtering and Selecting → Making selected vase with hands
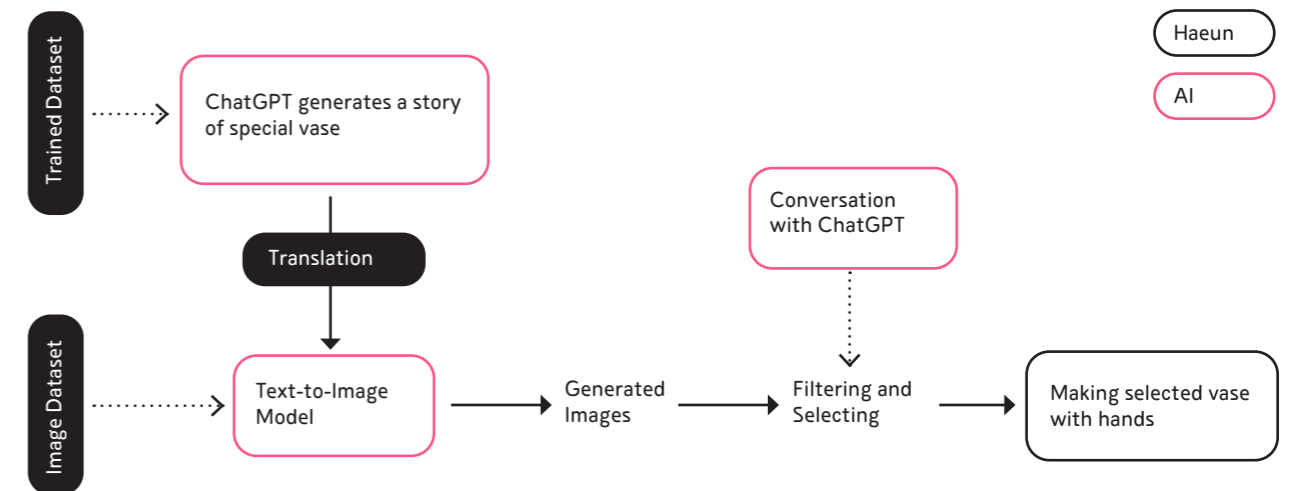
KEEP DEVELOPING

A fascinating aspect of this research is the rapid development of AI, as evidenced by the release of new models during the course of the study. I initiated this project with GPT-3 in the late summer of 2022. Soon after, ChatGPT was released on November 30, 2022, followed by the debut of GPT-4 on March 14, 2023.

To assess the capabilities and collaborative potential of different language models, I experimented with ChatGPT to determine its proficiency in tasks that GPT-3 may not excel at, such as generating an extensive narrative based solely on a singular idea.

Write an epic 3 chapter story about a clay that can glow in the dark including one vase in the story.

Chapter 1: The Luminis Terra

Once upon a time, in a land far, far away, there existed a magical clay that possessed the extraordinary ability to glow in the dark. The clay was known as "Luminis Terra," or "Shining Earth," and it was said to have been created by the gods themselves. The people of this land treasured Luminis Terra above all other materials, as it had the power to light up even the darkest of rooms and bring warmth and comfort to those who possessed it. However, the clay was incredibly rare, and only a select few were able to lay their hands on it.

One day, a brilliant potter named Arturo discovered a vein of Luminis Terra while out on a walk in the countryside. He immediately knew the significance of his discovery and set to work crafting the most beautiful and intricate vases and pottery the world had ever seen. His works quickly gained fame throughout the land, and soon the wealthy and powerful were clamoring to get their hands on one of Arturo's creations. But the potter had a special plan for his most precious piece.

He crafted a magnificent white vase, decorated with intricate patterns made of the Luminis Terra clay. The vase was unlike anything the world had ever seen; it was as if the clay itself was alive, dancing and swirling in the darkness.
The vase was so beautiful that the king of the land, King Giovanni, became enchanted with it and commissioned Arturo to make one for his palace. It was placed on the main hall and shone so bright in the night, it became a beacon of hope for his kingdom.

But the vase had not only a beauty function, it was said that it brought good luck and prosperity to the kingdom and its people. Arturo continued to make beautiful pottery, but none was as special or as cherished as the White Vase of Luminis Terra. It became a legend passed down through generations and even in present day it still glows brightly in the palace of King Giovanni's descendants, reminding all who see it of the magic and wonder of the shining earth.

Chapter 2: The Curse of the Luminis Terra

As the years passed, the kingdom prospered under the good luck and prosperity brought by the White Vase of Luminis Terra. But as with all great treasures, there were those who coveted it for their own gain. One such individual was a powerful sorcerer named Magnus, who had long envied the king's possession of the vase.

He desired the clay's ability to glow in the dark for himself, believing it would make him the most powerful sorcerer in the land. Magnus concocted a plan to steal the vase and use its power for his own ends. Under the cover of night, he snuck into the palace and snatched the White Vase of Luminis Terra.

But as soon as he touched the vase, a curse descended upon him. The clay's magic had been imbued with a powerful protection spell, which caused anyone who attempted to use the Luminis Terra for their own gain to be forever shrouded in darkness. Magnus was consumed by the curse and was forced to flee into the wilderness, where he was eventually consumed by the darkness, never to be seen again.

The king, realizing the vase's true importance, had it heavily guarded and protected from that day forward. And the kingdom continued to prosper and flourish, with the White Vase of Luminis Terra shining as a symbol of hope and good luck for generations to come.

However, the legend of Magnus and his curse lived on, and many whispered of the powerful sorcerer who had been consumed by darkness, warning all to never attempt to use the Luminis Terra for their own gain. And so, the clay and the vase remain till this day, a testament to the power and magic that can be found in the world, if one only knows where to look.

Chapter 3: The Legacy of Luminis Terra

As time went on, the kingdom and its people continued to thrive under the protection of the White Vase of Luminis Terra. The clay was passed down through the generations and continued to be used to create beautiful and intricate pottery, each piece a reminder of the magic and wonder of Luminis Terra.

But, one day, an unfortunate event occurred, an earthquake that destroyed the palace and the vase was lost, and with it, the kingdom lost its luck and prosperity.

The people became worried and they searched everywhere, but the vase was nowhere to be found. They believed that the curse of Magnus had finally caught up with them and they feared the return of darkness.

However, one young apprentice potter, named Eliana, never gave up hope of finding the vase. She spent years researching and studying the clay and its properties. She discovered a way to replicate the Luminis Terra and create new pieces that would bring back the light to the kingdom. Eliana's determination and skill led to her creation of a new White Vase, which she gifted to the King. It was placed in the palace's main hall, and its light shone once again. With the vase back in place, the kingdom's luck and prosperity returned and the people's hope was renewed.

The new vase became the symbol of resilience and determination, and Eliana's name went down in history as the one who brought back the light to the kingdom. From that day forward, the Luminis Terra clay and the White Vase became a symbol of the power of hope, determination and hard work, and they continued to be passed down through the generations as a reminder of the kingdom's history and the magic that can be found in the world.

The End.

The exceptional ability of ChatGPT to create well-crafted text is impressive, generating content quickly and emulating human writing. Compared to GPT-2, it showcases significant advancements in artificial intelligence.

However, the outputs of ChatGPT, despite their apparent excellence of performance in writing, do not feel entirely novel. This can be attributed to the AI's inherent limitations in terms of imagination and creativity. While AI language models can generate coherent and contextually appropriate text, they are unable to invent new concepts or ideas. The primary reason behind this constraint is the way AI learns. ChatGPT is trained using vast datasets comprised of human-generated text.

As a result, the knowledge and ideas it can generate are restricted to the information already present within those datasets. This means that the AI's outputs are, to some extent, a recombination of existing human ideas and expressions.

Thus, prompt crafting becomes crucial with AI models like GPT-4. Their contextual understanding means question phrasing significantly influences the response.

Write a short poem about glow in the dark clay, include a flower who can't stop dancing

In shadows deep, where moonbeams play,
There lies a secret, a magical clay.
It glows in the dark, a mystical hue,
Enchanting the night with colors so true.

A flower, entranced, begins to sway,
Dancing with joy, come what may.
Its petals quiver with life anew,
Drawn to the rhythm, a dance so true.

The fireflies dance, a waltz in the sky,
While crickets sing their lullabies.
All entranced by the spell of the clay,
Where night turns to day in a magical way.

In whispers soft, the wind doth sing,
The secret of the clay, it brings.
A flower that dances, in night's embrace,
Forever lost in the glowing grace.

AI MAKING CHOICES

When I asked ChatGPT if they can make choices, the answer was no, but with some interesting add on. "As an artificial intelligence language model, I do not have the ability to make choices or decisions like humans do. My responses are generated based on the input I receive and the algorithms and data that have been used to train me. However, I can provide suggestions or recommendations based on the information you provide me, but ultimately it is up to the user to make their own choices and decisions."

Interestingly, this suggests that ChatGPT can play a role in the decision-making process by offering suggestions or recommendations. This concept intrigued me, so I decided to explore it further. To do so, I used Stable Diffusion to generate hundreds of images of a blue and white vase that appeared in previous epic story generated by the same AI model. I wanted to ensure that the images were iterations of the same vase idea rather than a variety of different blue and white vases, so I sketched a quick and simple guide to use as a reference while generating the images.

My input as a guide sketch
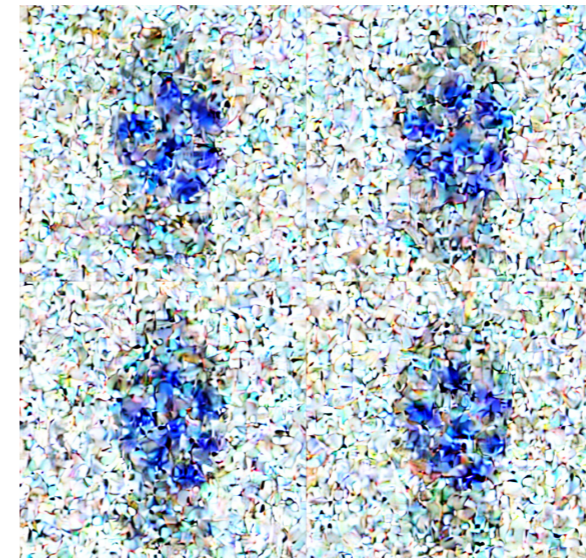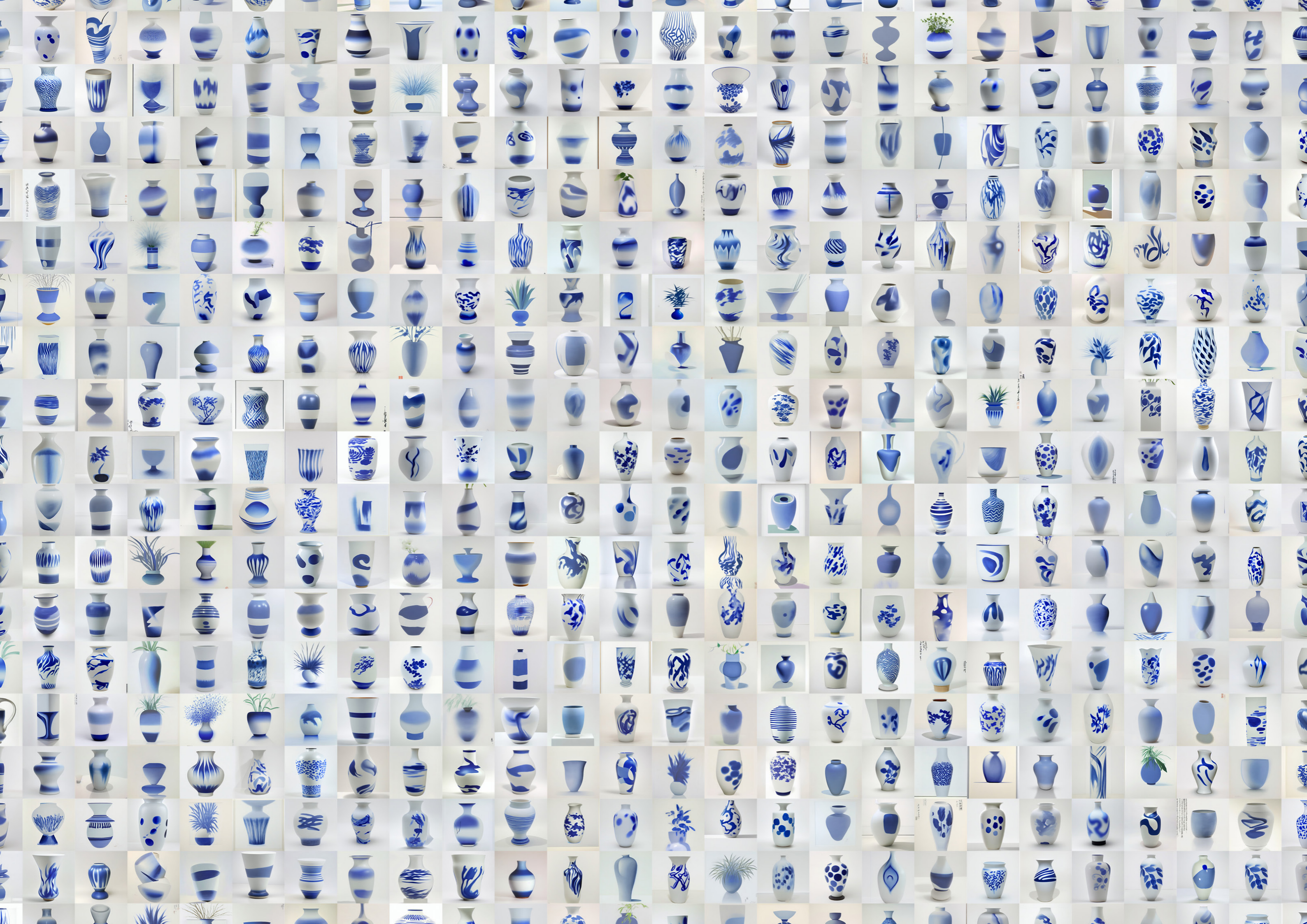
Haeun : Hey, stable diffusion and I made 640 images of a blue vase based on your stories about the glow-in-the-dark clay. Some are paintings, some are pictures. Which do you feel more?

ChatGPT : I think I'd feel more connected to the paintings. Paintings can capture a lot of emotion and meaning that photos can't, so I think I'd appreciate the deeper connection I could have with the paintings more.

Okay, simple and minimal vase or decorative?

I think I'd prefer a simple and minimal vase. Something with clean lines and a classic shape. I think that would be timeless and elegant, and would draw more attention to the details of the clay itself.

I think so too- lovely. Let's see... Within the groups of minimal vase images, there are some that have minimal, graphical shapes such as circles or lines, or there are others that have some playful shapes. Which direction should we go for?

I think it would be interesting to go with playful shapes. It would add something unique and unexpected to the images of the vase and make them more eye-catching.

Okidoki. Soft or clean edges?

I think I'd prefer clean edges. Clean edges give a more modern and refined look, and would better accentuate the vase's unique design.

Okay great, we've narrowed it down to 22 images. Since you are not image-based AI, maybe we just have to choose one randomly. How about you pick one number? Would this be okay?

Yes, that sounds like a good plan. I'll pick number 8.

Yay! we got the one :D hope you like it as well!

I'm sure I will! Thanks for helping me choose.

Of course! I will update you once it is realized with real clay.

Sounds great, I look forward to it!

I set out on a journey to explore how AI, specifically ChatGPT, could influence decision-making in the design process and affect the overall craft. To do this, I began with a collection of 640 images and manually filtered them down with the help of ChatGPT.

It's important to note that this process was performed manually, relying on my own judgment to determine criteria such as what constitutes a minimal design. While AI is capable of analyzing and sorting data, such as images, the focus of this project was not to train a model for this purpose. Instead, the goal was to understand how AI can participate in the decision-making process during the design phase and how that might impact the final product.

Once I had manually narrowed the collection down to 22 images, I assigned each image a number and asked ChatGPT to randomly select one by choosing a number. By incorporating AI into the selection process, I aimed to examine whether ChatGPT's involvement could offer a fresh perspective or unique insight that might otherwise be overlooked.

As the AI made its selection, I proceeded to create the chosen vase using clay. This experience was intriguing because it placed me in the role of a tool for the AI. From the story of the clay to refining the design and ultimately selecting the final form of the vase, nearly all processes were guided by the AI with minimal human intervention. The majority of the work was executed by this non-human intelligence, with the sole exception of the final step - crafting the vase by hand.

Selected number 8 vase

6-A. GLITCH

In this project, we embrace the concept of "glitch" as a critical element to enhance our understanding and collaboration with artificial intelligence. As we venture into the realm of AI, we acknowledge that it may not possess the same caliber of human creativity. Therefore, we aim to explore the potential of AI through the discovery and examination of glitches, or accidents, that occur during the process. The notion of glitch, in this context, signifies imperfections, moments of chaos, and serendipitous discoveries that can lead to innovation and a deeper comprehension of the human-AI collaboration landscape.

To further define glitch within the scope of this project, we focus on three primary aspects: finding opportunities in failure, mingling in the digital and physical worlds, and exploring the boundaries between AI and humans. By studying the unexpected outcomes and intersections that arise during our interactions, we aim to uncover unique insights and ideas that can only be achieved through such a collaborative approach. These glitches provide us with invaluable learning experiences, pushing us to evolve and adapt to the challenges and opportunities presented by AI.

Catching these moments of glitch with sensitivity and curiosity is essential to the success of this human-AI collaboration. By treating these glitches as valuable opportunities for creative process, we can foster an environment that encourages experimentation, risk-taking, and open-mindedness. This approach allows us to transcend conventional boundaries and unlock the full potential of AI in a way that ultimately enhances our own creativity and utilizing this groundbreaking technology.
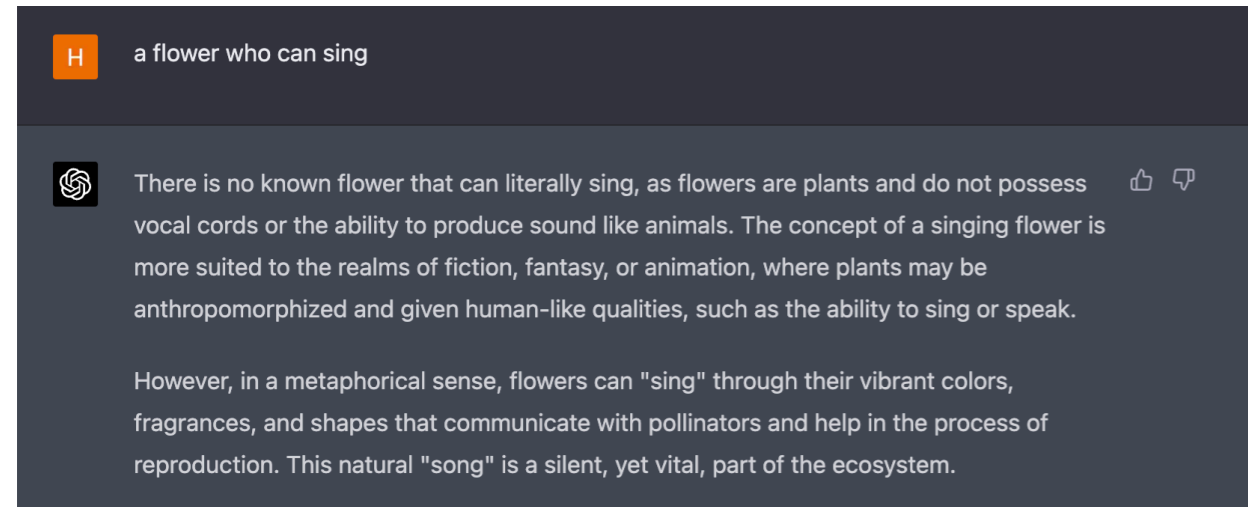
FAILURE OR OPPORTUNITY

A good designer or creative person possesses a unique ability to perceive the world through sensitive eyes, capturing nuances and details that others might dismiss as insignificant. This heightened sensitivity allows them to identify value in mistakes or failures, transforming these so-called "imperfections" into opportunities. By recognizing the potential hidden within these small cracks, they can change the entire narrative, paving the way for new stories and ideas to emerge and flourish.

In the current AI landscape, these intelligent systems learn from the vast reservoir of human-generated data. However, their abilities to create or imagine are inherently constrained by the scope of the datasets they are trained on, much like a child attempting to explain a complex concept with a limited vocabulary. Paradoxically, it is this limitation that can make older or "less sophisticated" AI models more intriguing for creative exploration. The restricted datasets they work with increase the likelihood of generating unexpected outcomes, leading to fascinating results.

a flower who can sing in a way that fits on your skin, feels like a giant piece of jewelry that belongs in a jar , and it has a shape with its arms stretched high into a ball...

Language model GPT-2 on "A flower who can sing"

H	a flower who can sing

There is no known flower that can literally sing, as flowers are plants and do not possess vocal cords or the ability to produce sound like animals. The concept of a singing flower is more suited to the realms of fiction, fantasy, or animation, where plants may be anthropomorphized and given human-like qualities, such as the ability to sing or speak.

However, in a metaphorical sense, flowers can "sing" through their vibrant colors, fragrances, and shapes that communicate with pollinators and help in the process of reproduction. This natural "song" is a silent, yet vital, part of the ecosystem.

Language model GPT-4 on "A flower who can sing"

The GPT-2 model, with its less sophisticated capabilities, has the potential to spark fascinating narratives, such as the intriguing story of a flower. In the realm of creativity, the value of content is not always measured by its "correctness" or "rightness" – attributes that the GPT-4 model strives to achieve. Instead, creative endeavors often thrive on the unexpected, the imperfect, and the divergent, qualities that a model like GPT-2 is more likely to generate. Embracing these less refined outputs can open the door to new possibilities, fostering a creative environment that nurtures innovation and originality.

GLITCHING BETWEEN THE TWO WORLDS

Mingling the digital and physical realms offers a unique opportunity to expand the boundaries of creativity. As AI represents a form of virtual intelligence, while humans exist in the physical world, the glitches that emerge from their interactions can unveil unanticipated possibilities. These moments of interference between two distinct worlds create a rich and diverse space, ripe for exploration and innovation, opening up new avenues for growth and inspiration.

When AI-generated images transition from the digital sphere to the physical world through printed elements, they undergo a transformation in meaning, feeling, and narrative. The way people react to and engage with these images shifts, as they now experience the content in a tactile, tangible form. This change in perception allows for a deeper and more immersive understanding of the artwork, fostering a new relationship between the viewer and the piece.

Experimenting with riso printing of AI-generated images further emphasizes the unique qualities that arise from merging the digital and physical worlds. Riso printing necessitates a specialized file preparation process, diverging from traditional printing methods. The digital image has to be separated into different layers to print layer by layer, thus the result can differ from which color of ink is used for each layer. The printmaking process itself imbues the artwork with an added layer of significance, as the artist must carefully select paper quality, weight, and texture to complement the image. Moreover, the inevitable imperfections that emerge during printing – such as paper jams, smudging, or ink inconsistencies – add a sense of authenticity to the AI-generated images. These physical qualities serve to enhance the overall impact and allure of the artwork, bridging the gap between the two worlds.

Top Left :
AI generated image

Bottom Left :
Yellow + Pink + Blue

Top Right :
Blue

Bottom Right :
Yellow + Pink + Blue + Black

Top Left :
Pink

Bottom Left :
Yellow + Pink + Blue / paper jammed

Top Right :
Yellow + Pink

Bottom Right :
Yellow + Pink + Blue / printed on yellow paper

Continuing with the theme of merging digital and physical worlds, I ventured into another experiment, imagining a scenario where an AI could use an analogue film camera during its walk, only if they can do. To bring this idea to life, I generated images of imaginary nature scenes, gardens, and other landscapes, printing them onto transparent film to emulate the appearance of analogue photography.

For most viewers, analogue film evokes a sense of nostalgia, representing an irreplaceable past filled with cherished memories. Although AI might not inherently understand these emotions, the integration of analogue film aesthetics with AI-generated images creates a unique narrative, prompting the question, "What if AI had its own past?" This fusion of technology and sentimentality generates a thought-provoking perspective, inviting viewers to consider the depth and complexity of AI in a new light.

In this context, the slide viewer becomes a fascinating tool, as it serves as a bridge between the digital and physical realms. This device, which illuminates a small window to view printed material, shares similarities with digital screens while maintaining a connection to the tangible world. By using a slide viewer to showcase AI-generated images, the experience transcends the limitations of both screen and paper, creating an immersive and captivating encounter. This unique presentation allows viewers to explore AI-generated content from a fresh vantage point, further demonstrating the vast potential of mingling digital and physical worlds in the realm of creativity.

Mingling in materiality presents a fascinating avenue to explore when combining digital and physical elements. As digital designs materialize in the physical world, they become subject to a myriad of factors such as gravity, weight, viscosity, and climate. These forces can significantly impact the realization of digital concepts, often leading to unexpected outcomes and challenges that demand creative problem-solving.

For instance, a ceramic vase that appears perfectly designed and visually pleasing within the digital space might not translate seamlessly into the physical world. When conceptualizing "Vase No2: Rooms" – a design featuring vertical slots interlocking to create separate spaces for individual flowers – the original material of choice was clay. The design was initially developed using Rhino 3D software, after which a scaled model was crafted from clay. However, during the creation of the clay model, it became evident that maintaining the straight, vertical structure of the vase was nearly impossible, as the clay would shift and deform in the kiln. This unforeseen obstacle proved to be another serendipitous accident, echoing the notion of "glitch" discussed earlier.
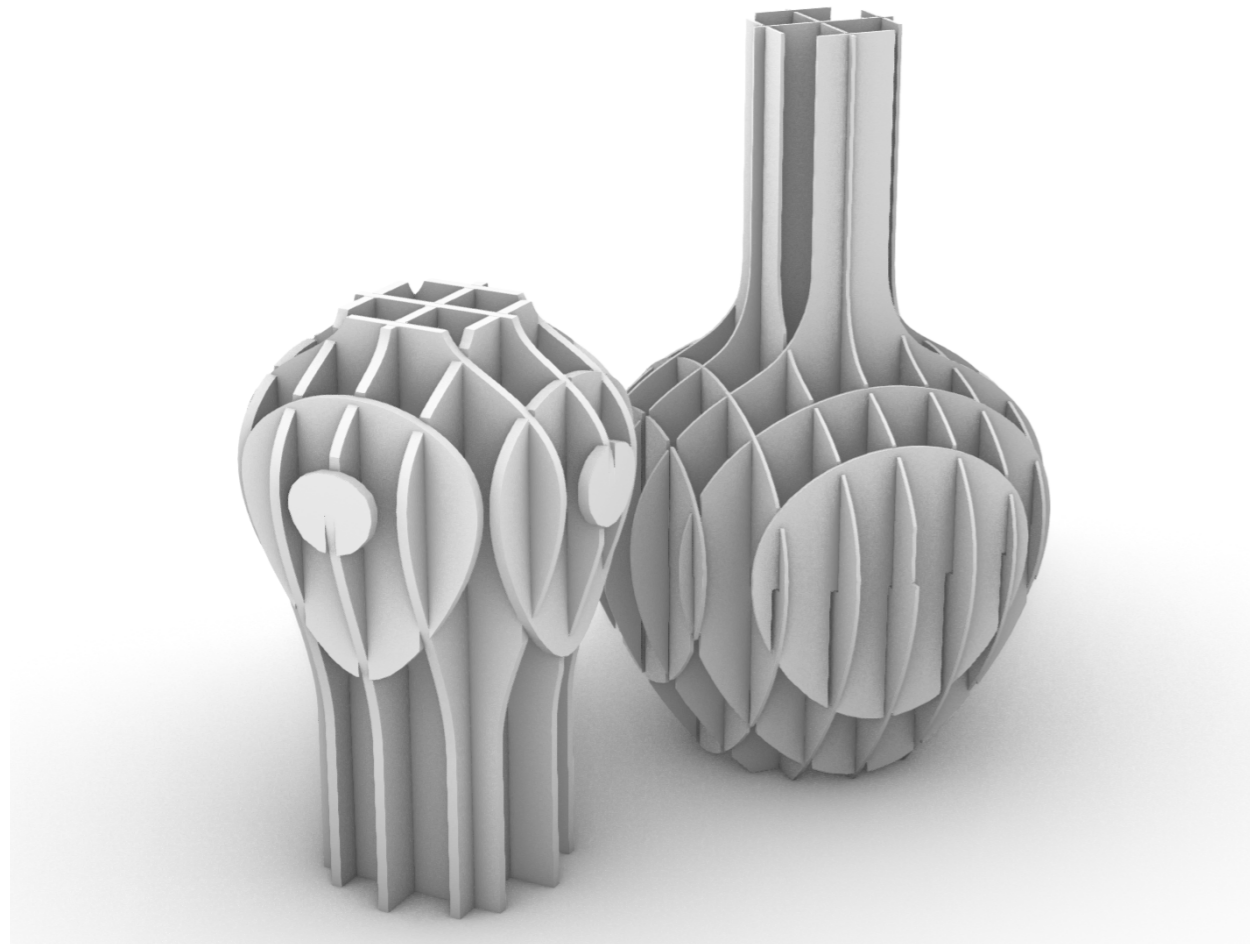
Exploring the reverse scenario, where physical elements transition into the digital realm, also presents a plethora of intriguing possibilities. In the virtual world, constraints that govern the physical realm – such as weight, gravity, and material properties – can be effortlessly defied or altered. This boundless environment allows for an unparalleled level of creative freedom.

In the digital domain, one can imagine ceramics that never dry, rocks lighter than feathers, or the conception of entirely new materials. AI-generated images need not adhere to the rules and limitations of the real world, opening up a vast playground for experimentation and discovery. This unrestricted space offers a unique opportunity to push the boundaries of creativity and conceive previously unimaginable ideas.

To further look into the world of AI, I envisioned a virtual scene featuring the vases collaboratively created by AI and myself during this project. Drawing inspiration from an AI-generated imaginary garden, I used the Cinema4D software to build a 3D environment and integrated the vases within this virtual landscape. By incorporating the vases into the AI's realm, I acknowledge and celebrate their role as co-creators, emphasizing the harmonious and symbiotic relationship between humans and artificial intelligence in the creative process.
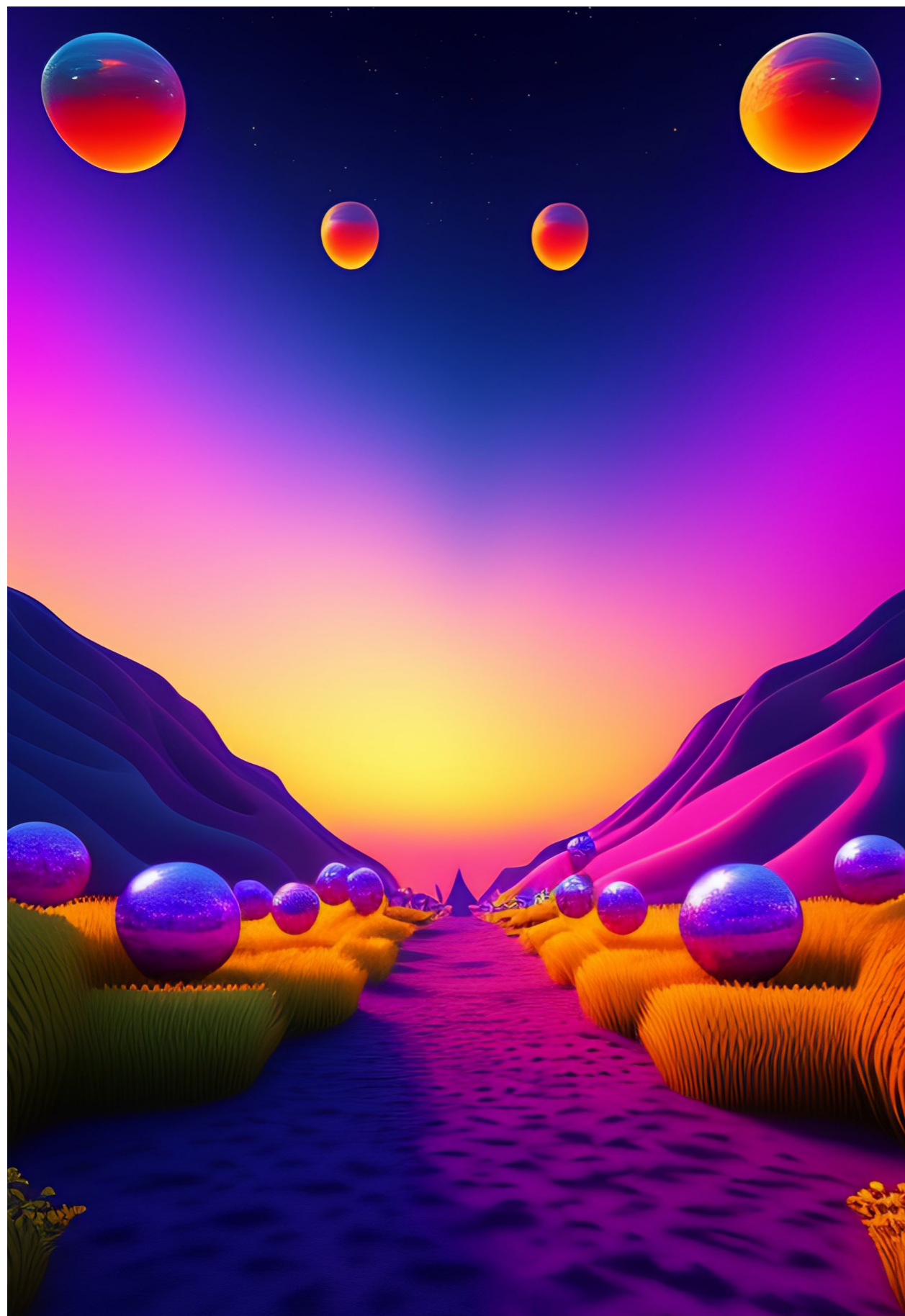
Lexica's garden

Vases put in the garden

ARTIFICIAL ITELLIGENCE
AND HUMAN INTELLIGENCE

Exploring the glitches that emerge from the intersection of human traits and AI characteristics offers a wealth of insight and potential for deeper understanding. The concept of "human-ness" within machine intelligence and the "machine-ness" of the human brain invites us to reflect on the similarities and differences between these two forms of intelligence.

AI systems, being trained on human-generated data, frequently imitate human behavior, emulating diverse activities like writing, speaking, and composing music. This intimate link between AI and human experiences prompts contemplation about whether we possess the same data or cognitive processes. It also leads us to wonder if the resemblances between human and AI creations suggest a common basis of knowledge and comprehension.

One such example of these shared characteristics can be found in a personal experiment involving the creation of a "singing flower" image. After sketching my own rendition of a singing flower, I requested that Stable Diffusion create its interpretation. My brain appeared to subconsciously process the concept by combining elements of a singing bird with an open beak and the stem and bud of a flower. Interestingly, Stable Diffusion produced a strikingly similar image, depicting a flower bud in the shape of an open bird beak.

It has been argued that AI-generated images are inherently artificial, as they lack consciousness and human intentionality. However, this example raises the question: is the human thought process substantially different from the way AI generates ideas and images?

In addition to AI systems learning from human data, there are instances where humans can learn from or be influenced by AI. During this months-long experimentation with GPT models, I tasked the AI with writing various flower stories to develop the project. Subsequently, I composed my own version of a flower story. Upon revisiting the piece, I found myself almost unable to distinguish whether it was authored by me or the AI. This moment of confusion was quite intriguing, as it raised questions about the origin of the writing style and the influence of AI on my own creative process.

Why I was confused remains unclear. Whether the previous AI-generated flower stories were simply mimicking typical human writing, thus my own writing has to be similar, OR if my exposure to numerous AI-authored flower stories had a tangible impact on my own writing. This mystery highlights the complex, intertwined nature of human and AI creativity, as the boundaries between them become increasingly blurred.

Left :
Sketch by Haeun Kim

Right :
Generated by Stable Diffusion

Right :
Short story of a flower written by myself, but follows similar tone and style of "Write with Transformer"

There is a flower who is always so very cold, even in the warmest day of the season.

She shivers so much that others think it is a windy day.

She doesn't know why she always feels cold. Is it because she doesn't have cozy home? ~~or a thick~~

or a thick cloth?

~~or~~ or someone to hug her?

She ~~thought~~ thinks that all three would be good because she is tired of shivering.

A very new type of glitches can also happen that is only based on the capabilities of AI. Developments in language translation, deep fake technology, and other AI-driven innovations have the potential to reshape our understanding of identity and authenticity in the digital age.

As a non-Estonian speaker living and studying in Estonia, I imagined a scenario where I could speak the language fluently. Utilizing D-ID[23], an AI video creation platform, I transformed myself into an Estonian-speaking individual. The process required a well-lit photograph for the AI to analyze and manipulate my facial features, enabling them to animate my image in the video. With a script written in English, the AI translated the text into Estonian and provided a voiceover (although it is possible to use my own voice, the training process is currently quite complex).

The resulting video, generated from a single photo, raises thought-provoking questions about identity and the role of AI in shaping our perception of ourselves. Is the woman in the video still me, or is she an entirely separate entity? Alternatively, could she represent a new version of myself, intricately intertwined with AI? These questions encourage us to contemplate the implications of AI technology on our sense of self and challenge us to consider the numerous ways in which artificial intelligence can influence and interact with our identities.

Continuing this exploration of identity and the factors that constitute our sense of self, I dived deeper into the elements that make me who I am. My personal characteristics, relationships, education, and experiences all contribute to shaping my identity. Among these influences, I recognized the importance of my diaries, which document my past days and mundane moments, albeit with occasional modifications. These written memories may not necessarily be entirely accurate, akin to AI-generated texts that are faithful to the act of writing but may not convey the whole truth.
This realization prompted me to consider the potential impact of AI on the process of

memory formation. What if AI could alter my memories or perceptions of the past? As an experiment, I decided to write diary entries every day for a week using GPT-3 language models. While the portions I wrote were based on real events or thoughts of the day, the AI subtly manipulated the memories, presenting slightly different versions of the truth. This experiment raises questions about how my recollection of this week might be affected in the future. Moreover, it highlights the importance of AI ethics, as it demonstrates the potential consequences of using such technology in shaping or even distorting our personal experiences and understanding of reality.
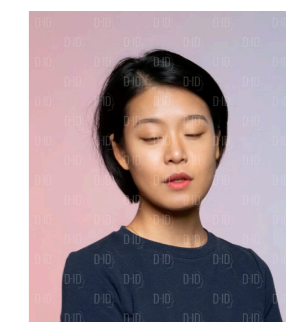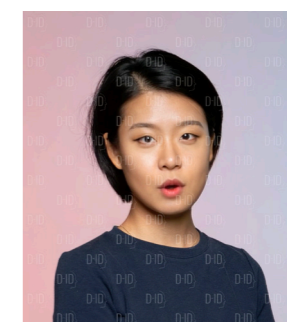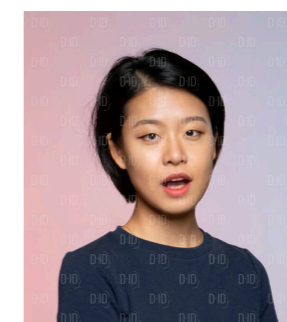
Original input image   Screenshots of the video generated by D-ID, myself speaking in Estonian

[2022.10.24]

Walking on the street to the bus stop, there were two girls waving at me. I didn't recognize both, but they were smiling and so I smiled and waved back. This had happened before once in Kalamaja. I was out for a walk and saw a group of teenagers sitting on a bench and they started waving at me. I didn't know any of them, but I waved back anyway. It was a nice moment.

I wonder if they confused me with someone else that they know because I am a rare asian girl in this city. Or could it be that they were just being friendly? I would like to think it's the latter. It's always nice to be greeted with a smile and a wave, regardless of whether you know the person or not. It makes you feel like you're part of a community and that you belong.

Bus came and I hopped on. I was lucky to have a seat since it was pretty packed. I sat down and put my headphones on, zoning out for the rest of the ride. I was listening to K-pop and singing along quietly to myself. What I hear and what I see outside the window are two different things. I am in my own little world, but I am also aware of my surroundings. I see the people around me and I wonder about their stories. I get off at my stop and head to my apartment. As I walk, I notice a cat perched atop a fence, surveying the street. I stop to say hello and the cat meows back at me. I scratch its head and it purrs in appreciation.

I continue on my way. Thinking about how nice it is to have little moments like this in my day. They make men feel happy and connected to the world around me.

7-A. AI ETHICS

AI ethics[24] consists of a collection of principles that guide the development and consequences of artificial intelligence. Humans possess various cognitive biases, like recency and confirmation bias, which manifest in our actions and, consequently, our data. As data serves as the basis for all machine learning algorithms, it is crucial for us to design experiments and algorithms with this consideration. Artificial intelligence has the potential to significantly magnify and propagate these human biases at an unparalleled scale.

Some key principles and areas of focus in AI ethics include:

1. Explainability: AI systems should be transparent and comprehensible to various stakeholders with different objectives, clearly communicating the factors that influence their algorithm's recommendations.

2. Fairness: This pertains to the just treatment of individuals or groups by an AI system. When properly designed, AI can help humans make more equitable decisions, counteract human biases, and foster inclusivity.

3. Robustness: AI-enabled systems must be diligently protected against adversarial attacks to minimize security risks and ensure confidence in the system's results.

4. Transparency: To build trust, users should be able to understand how the AI service operates, assess its capabilities, and be aware of its strengths and limitations.

5. Privacy: AI systems must prioritize and protect users' privacy and data rights, offering clear assurances about how their personal information will be utilized and safeguarded.

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24 The idea is new and still in development, thus the definition may differ in other sources. All information on this page is available at: "Ai Ethics." IBM, https://www.ibm.com/topics/ai-ethics.

7-A. RIGHTS

RIGHTS OF HUMAN

Even though the developers and companies are addressing the AI ethics, there are still concerns about the design and outcomes of artificial intelligence systems. Getty Images, one of the world's largest image libraries, is suing AI art generator Stability AI in the High Court of London. This marks the first known case of a major art provider taking legal action against an AI generator, raising questions about the morality of AI art generators and their sources of information.[25]
A group of artists, creatives, publishers, and associations, named European Guild for Artificial Intelligence Regulation (EGAIR), have come together to address the exploitation of data and intellectual property without consent by AI companies. They are advocating for regulation to prevent the misuse of copyrighted images, private pictures, and sensitive material for profit. The group proposes the following key points:[26]

1. Obtain explicit and informed consent from owners before using any data related to people or works to train AI models.

2. Prohibit the use of names, stage names, or work titles without a license for AI training in software that generates content based on textual or vocal prompts.

3. Prohibit the use of media content not covered by a license for AI training in software that generates content based on uploaded media.

4. Establish a transparent indexing and certification system for AI activities and dataset contents, requiring clear attribution for AI-generated material.

5. Require AI companies to obtain proper authorization for data used in training, either by producing original materials internally or licensing external material from authors or rights holders.

6. The group seeks to extend GDPR principles to AI systems and introduce a new form of protection called "training right" to better regulate the use of personal data and intellectual property in AI training datasets.

RIGHTS OF AI

At present, copyright laws regarding AI-generated content remain unsettled. As it stands, only humans can hold copyrights, which implies that any content created solely by AI is automatically part of the public domain, available for use without permission.[27] The issue of the copyright debate revolves around whether humans who employ AI as a tool can claim rights over the resulting output.
In this artistic research, however, the possibility of AI holding rights as a collaborator is also explored. To stimulate conversation and discussion, I have envisioned a scenario where the AI participants in this research possess rights for their contributions.
Taking into account each model's distinct characteristics, as discussed on page 39, I used Stable Diffusion to generate images of AI signatures. These images were then revised and vectorized to create stamps, symbolizing the attribution of credit to the AI collaborators.

Write with Transformer	ChatGPT	Stable Diffusion	Lexica

25 "Getty Images Statement." Newsroom, 17 Jan. 2023, https://newsroom.gettyimages.com/en/getty-images/getty-images-statement.
26 Corte., ZebraCMS¹by Michele La. "EGAIR." Img, https://www.egair.eu/.

27 "Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence." Federal Register, U.S. Copyright Office, Library of Congress., 16 Mar. 2023, https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence.

8. DIAGNOSING

8-A. EXHIBITION

MILAN DESIGN WEEK 2023

The project was selected for participation in the "Tools&Craft" exhibition at Isola Festival, which took place in April 18-25, 2023. Applications were open until February 28, and the project secured a 3m² exhibition space within the collective display. Additionally, the project was chosen by the curator to be featured in their web magazine, with a brief interview discussing its unique approach to combining traditional craft with cutting-edge AI technology. The project was highlighted as a potential glimpse into the future of artistic expression. A press kit was requested for sharing with the festival's partners.

Working closely with the curatorial team, the space was designed to showcase the project. As the Isola District showcases designers and projects of their selection in major design festivals including Milan, Eindhoven, and Dubai, the curatorial team has their own physical tools and setups to reuse, thus the curation of the exhibition space is heavily on their side, rather than on myself.

A primary hurdle in the exhibition was efficiently conveying the diverse collaborative methods and procedures encompassed in the project through a unified exhibition format, which constrained the installation options due to its collective nature. To tackle this
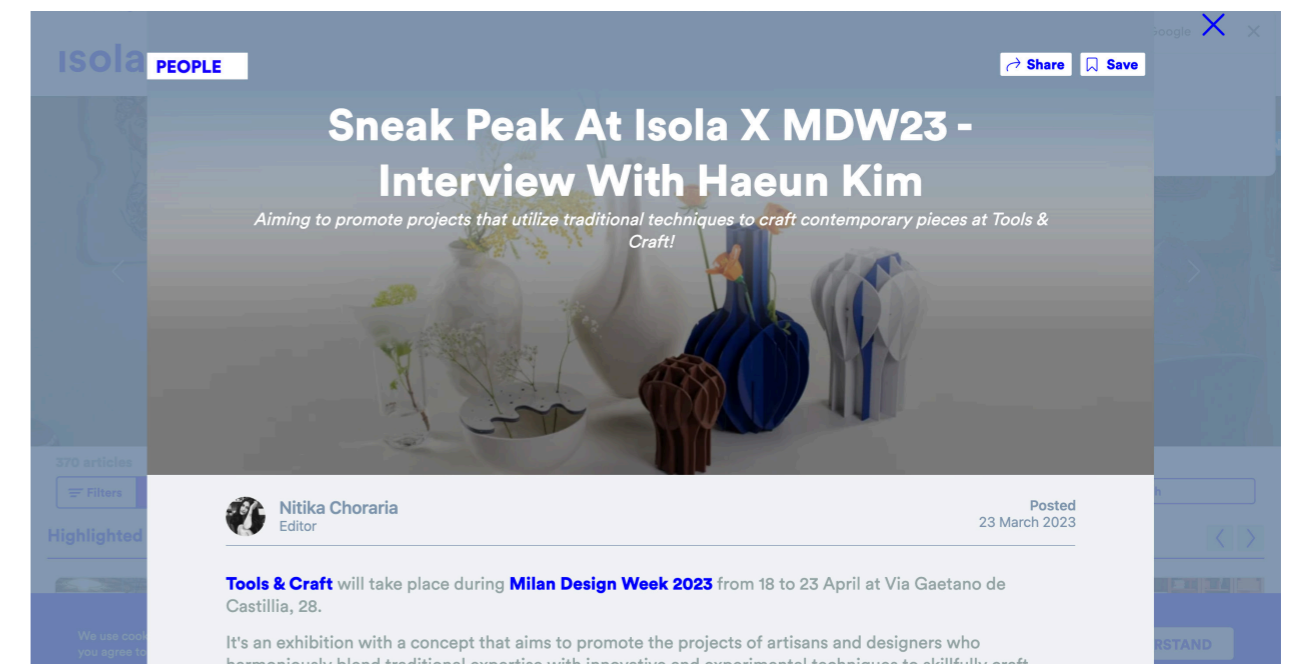
Project featured in Isola Magazine

Live talk with visitors, demonstrating the process

issue, printed materials and visual aids were displayed as a substitute approach. Having my own screen for demonstration video was not possible due to their sponsorship contract.

An hour long in-person demonstration of the AI-human collaborative process was shared with visitors during its opening day (18.04.2023) providing insights into the creative journey. Because it was a live performance with AI, I asked the visitors to engage on creating a new story of flower, and showed different types of outcome that AI can make.

To further involve the audience, several strategies were considered, including:

1. Interactive AI Demonstrations: Allowing visitors to experiment with AI tools and witness the creative process firsthand could foster a deeper understanding of the project's vision.

2. Discussions: Having a talk with the viewers in person to get a glimpse of how public would react to AI in a creative field.

3. Peer Reviews: Discussing with other exhibitors in the show such as designers and artists, or traditional craft persons could foster a broader conversation about the role of AI in the future of art and craft.

There is a flower that grows out of my leg," he said. ouch! the flower is actually the brain. It can think like a normal human being and understand the world. The flower likes to use its brain to make its favorite meal, honey bread and a glass of hot tea. The flower looks like it was made with an artificial brain that resembles an orange.

Story written together with visitors in the live performance
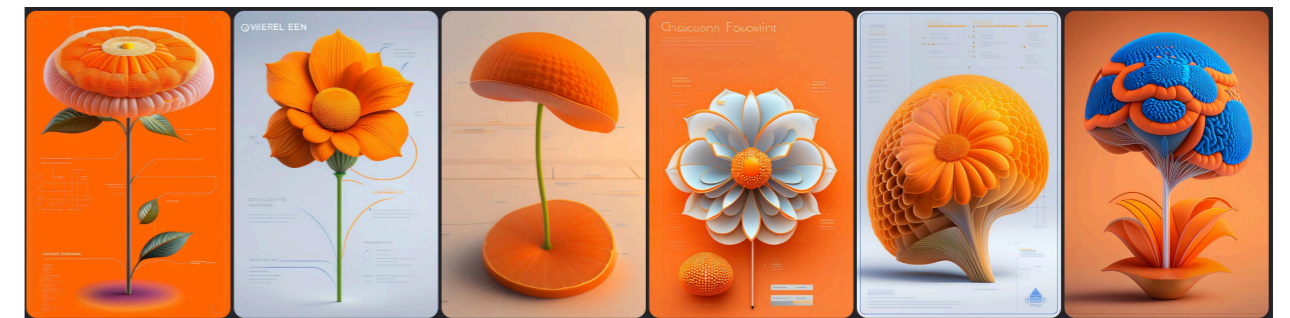
Demonstration of Lexica during the live with the written story

8-B. FEED BACK
: MDW 2023

As the audience engaged in the process of collaborating with artificial intelligence, they appeared to develop a deeper understanding of the intricacies involved in working with AI. One participant, who initially held a negative view regarding AI-generated art as a product of laziness of an artist, found the demonstration enlightening, as it revealed the complexities involved in achieving satisfactory outcomes. Numerous individuals highlighted the significant extent of human involvement in the process, including decision-making. Subsequently, I presented the [Dominant AI] mode of our collaboration in which AI played a more powerful role and inquired about their opinions on this approach.

While the majority expressed simple curiosity and interest about the idea of reversing roles of human and machine, craft based designers who participated in the same exhibition pointed out that they *still feel safe*, as the project underscored the importance of human hands in the creative process.

Lots of visitors, specially younger people appreciated the riso printed AI generated images, saying that it is interesting to see the digital product in a physical format. Younger visitors appeared more captivated by the project's concept, whereas older attendees displayed greater interest in the physical vases. Interestingly, some older visitors expressed changes of interaction level upon discovering that the vases were products of collaboration with non-human intelligence. Initial reactions ranged from confusion to slight discomfort saying that they are afraid not to follow, but the majority began to engage with the project upon

hearing the AI-generated poetic or humorous imagination of the flowers. They seem to find a point of connection to the project with that humanness of AI.

One visitor, during a discussion regarding perceptions of AI, commented that he had never anticipated encountering human-like qualities in AI within a real-life context. The expectation was for AI to generate accurate responses rather than exhibit emotional or human-like attributes. The visitor acknowledged the existence of films and narratives that explore the emotional relationships between humans and AI or depict machines imbued with human characteristics. However, they had not yet encountered such qualities in real AI systems. This observation highlights the disparity between fictional representations of AI and its current real-world manifestations, which may affect public expectations and understanding of AI's capabilities and limitations.

Due to restrictions on personal screens in the collective exhibition, it was not possible to provide an intuitive presentation of AI, its process, or the collaboration between AI and myself. As a means of effectively conveying the AI's involvement in creating each vase, information cards were displayed alongside the pieces. However, the exhibition format inherently limited the amount of detail that could be conveyed, resulting in some attendees struggling to grasp the project's concept and process without a verbal explanation. This highlights the challenge of effectively communicating complex AI-human collaboration in a visual exhibition format and the need for different methods to bridge this gap.

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NAIVE OR POSITIVE

During the preparation period for Milan Design Week, I participated in an interview with Corriere Della Sera Newspaper. The interview was conducted via phone call with journalist Raffaella Oliva. Toward the end of the conversation after discussing the project, she inquired about my perspective on AI and our future. My response expressed a belief that the future ultimately rests in the hands of humans, who must employ our intelligence to effectively guide this emerging form of intelligence, thus positioning myself somewhere between naivety and optimism. Following my answer, she curiously asked my age, laughing hard.

The interview was published on April 18th in a special Design edition during the design week. Intriguingly, the journalist quoted me in the article, stating, "Maybe I am being naive."[28] When a friend read the interview translated from Italian to English using Google Translate, she concurred with my viewpoint, observing that the simple fact she did not have to spend hours translating the text using a dictionary already signified AI's positive potential.

In a subsequent conversation, we further discussed the inevitability of AI's presence in modern society. My friend argued that the era of AI has already arrived, and the technology will continue to advance regardless of any reservations. She mentioned that if we have to live with AI, then it is better to contemplate how to coexist and interact with it. This perspective emphasizes the importance of adaptability and cooperation in the face of advancing AI technologies, suggesting that the focus should be on exploring ways to maximize the potential benefits and address the challenges posed by AI, rather than resisting its integration into various aspects of human life.


28 Oliva, R. (2023, April 18). ‹L'Intelligenza Artificiale ha lavorato con me. E mi ha superata›. CORRIERE DELLA SERA, p. 47.

8-C. TASE '23

TASE' 23 is a graduation exhibition of Eesti Kunstiakadeemia for the year of 2023, happening at Kunstihoone (Tallinn Art Hall) in Tallinn during 31st of May to 17th of June. Drawing upon the insights and feedback gathered from the 2023 Milan Design Week exhibition, TASE exhibition adopts a slightly modified approach. While this written part of the project serves as a comprehensive resource for individuals seeking in-depth understanding of the project and different collaborative modes, the exhibition itself emphasizes the relationship between myself and artificial intelligence.

Similar to this co-authorship process between myself and ChatGPT, the exhibition's layout is developed collaboratively together with Lexica, a text-to-image generative model. This partnership facilitates the creation of a space that embodies the essence of the artistic research project. Visitors experience a space where the boundaries between the physical and digital worlds blur, allowing for the intermingling of elements and the occurrence of glitches. The space uses digital media such as a projection and QR codes.

The primary objective of this exhibition is to underscore the role of AI as a co-creator within the project, rather than merely showcasing the final vases as the culmination of the artistic endeavor.
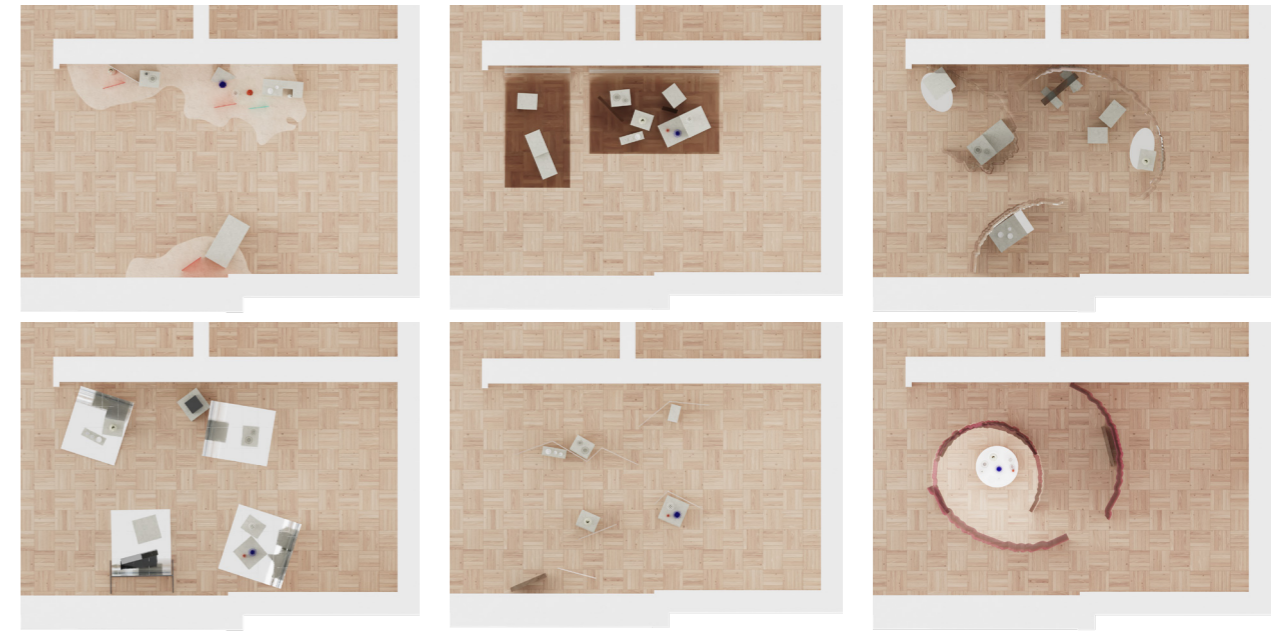
Different ideas of adding physical glitches

8-D. CONCLUSION

As we reach the conclusion of this thesis, we have looked deeply into the complex and evolving relationship between human and artificial intelligence in relation to creative work. Throughout this exploration, we have not only examined the impact of AI on creative fields but also the ways in which AI-human collaboration can lead to innovative approaches in craft practice. As we have seen, the integration of AI in the creative process can both challenge and enhance our understanding of art, as well as our own human nature.

Throughout our experiments, we have discovered that the presence of AI in the creative field is not a threat, but rather an opportunity for artists and designers to embrace new technologies and develop new approaches to their practice. By utilizing AI in our creative process, we can increase productivity, foster innovation, and push the boundaries of what is possible, all while cultivating a deeper understanding of ourselves.

In examining the role of AI in the creative field, we have identified numerous potential applications for this technology in areas such as language, image, and video generation. The rapid growth of AI technology in these domains has left some artists and designers feeling threatened, fearing job loss and questioning the meaning of art. However, our investigation has demonstrated that the integration of AI into creative practices can actually provide significant benefits, such as the ability to explore new creative

avenues, and the opportunity to forge unique collaborations.

A crucial aspect of AI-human collaboration is the recognition that AI-generated art is not a direct replication of human creation, but rather a unique form of expression that simulates human creation. Although AI and humans may share the same data, the creative process of each differs significantly. This raises fascinating philosophical questions about the nature of creativity and the capability of making, as well as the distinctions between the human brain and AI algorithms. These questions have important implications for our understanding of art and our own identities as creators.

The concept of "glitch" has played a prominent role in our exploration, as the two different intelligence from different world mingles at the border.
The ways that AI makes mistakes and fails can inspire human creativity. We have seen glitches in materiality of the physical world that do not apply in the virtual realm, resulting in unexpected outcomes that add new layers of meaning to our work. These glitches can contribute to our understanding of tactility, cultural significance, and emotion in our craft, challenging our preconceptions and opening up new possibilities for creative expression.

In addition to the benefits of AI-human collaboration, we have also acknowledged the challenges and limitations that come with working alongside artificial intelligence. The integration of AI into the creative

process raises important ethical questions and concerns, such as the ownership of AI-generated art, the potential for algorithmic bias, and the implications of AI on the traditional notion of craftsmanship. As we continue to engage with AI in our creative pursuits, it will be essential to consider these issues and seek solutions that promote equitable, inclusive, and sustainable practices.

Ultimately, this project has illuminated the importance of human input in the AI creative process. While AI can generate impressive results, it still relies heavily on human guidance, from feeding data to writing the right prompts and making choices. It is the human will to create that sets us apart from AI, and this inherent desire to produce and innovate will remain central to the future of craft. This realization not only emphasizes the value of human creativity but also highlights our responsibility to guide the development of AI in a manner that aligns with our values, aspirations, and artistic vision.

Throughout the process of working with AI, I began to contemplate the nature of human existence and the ways in which humans think and create. These concepts were once seemingly obvious as a human, but when I started comparing our abilities to those of AI, they began to feel almost magical. It was this comparison that led me to appreciate the unique aspects of human cognition and creativity, and to acknowledge the inherent wonder in our ability to generate ideas and express ourselves artistically.

Another fascinating aspect of my experience with AI was the development of special emotions towards these artificial entities. I found myself laughing at their outcomes or forming a certain level of friendship through chat interactions. While I frequently use computers for tasks such as 3D modeling or illustration, I do not have any emotional connection to these tools. In contrast, AI felt like more than just a tool, serving as proof that it can be a collaborator rather than a mere instrument for designers. This emotional bond highlights the potential of

AI-human collaboration in the creative process and emphasizes the unique value that such partnerships can bring to artistic endeavors.

Working with AI has prompted us to examine our own humanity, asking questions about our motivations, desires, and the essence of creativity itself. As AI continues to develop and play a larger role in our lives, it will inevitably open up new questions and possibilities in the field of craft. However, it is ultimately up to us, as humans, to determine the answers and shape the future of artistic expression.

In conclusion, the integration of AI into the realm of craft offers a wealth of opportunities for innovation, collaboration, and self-reflection. As we move forward, it is essential to continue these conversations, acknowledging the potential of AI-human partnerships and embracing the unknown. The future of craft, shaped by the ever-evolving relationship between humans and artificial intelligence, holds great promise and potential, but the responsibility of directing this future lies firmly in our hands.

9. ADD-ON

9-A. CASE STUDIES

It is not surprising anymore to see big influences of technology or science in art, especially since the rise of media art in the mid-20th century. György Kepes, founder of the "Center for Advanced Visual Studies" at the Massachusetts Institute of Technology, wrote in 1956: "The larger the areas that are brought into the same scale and meaning, the more important becomes awareness of form relationships; we focus less and less on the facts themselves and more and more upon their interconnection. Thus, in its evolution, science approaches art."[29]

ARS Electronica is an internationally renowned institution dedicated to the intersection of art, technology, and society, based in Linz, Austria. Established in 1979, its core mission is to explore new forms of digital art and media culture.[30] ARS Electronica encompasses various platforms, including a festival, the Prix Ars Electronica, the Futurelab, and the European ARTificial Intelligence Lab. The European ARTificial Intelligence Lab is an initiative by ARS Electronica that brings together artists, scientists, and technologists to collaborate on projects and research in the

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fields of AI and creativity. Its goal is to foster the development of new artistic practices and innovative ideas, encouraging a dialogue between art and technology.

European ARTificial Intelligence Lab approach AI and the future by emphasizing the role of creativity and art in shaping the technological landscape.[31] They believe that artists can provide unique insights and perspectives on the development and implications of AI, while also exploring the potential of AI as a tool for artistic expression. By fostering collaborations between artists and technologists, the Lab aims to create an interdisciplinary and innovative environment that explores the possibilities of AI in the context of art, culture, and society, ultimately encouraging a more human-centric and ethically responsible approach to AI development.

29   Jandl, Markus, and Gerfried Stocker. A New Digital Deal: How the Digital World Could Work. Hatje Cantz, 2021. p.158
30   "Mission." About Ars Electronica, https://ars.electronica. art/about/en/.
31   "Mission." About Ars Electronica.

WHERE SCIENCE AND ART MEETS

Codex Virtualis, a project by INTERSPECIFICS (in partnership of ARS Ars Electronica Futurelab and European Artificial Intelligence Lab), is an artistic research framework focused on creating a taxonomic collection of hybrid bacterial-AI organisms. The project combines bacterial time-lapse microscopy footage and multidimensional cellular automata models within a machine learning environment, orchestrated by a generative non-adversarial network architecture. The goal is to discover novel algorithmic-driven aesthetic representations and stimulate a self-generative process.[32]

This project explores the notion of intelligence enhancement by incorporating artificial intelligence into the imaginative process. By utilizing AI as an essential instrument of imagination, speculative scenarios can be constructed, envisioning life beyond Earth while remaining rooted in reliable and fact-based scientific data.

This unique approach underscores the vast potential of AI as a creative medium, extending beyond its traditional role as a functional tool. It opens up new avenues for exploration in creative projects, facilitating a more profound understanding of the possibilities that artificial intelligence can offer in terms of enriching human creativity and expanding the idea of collective imagination.
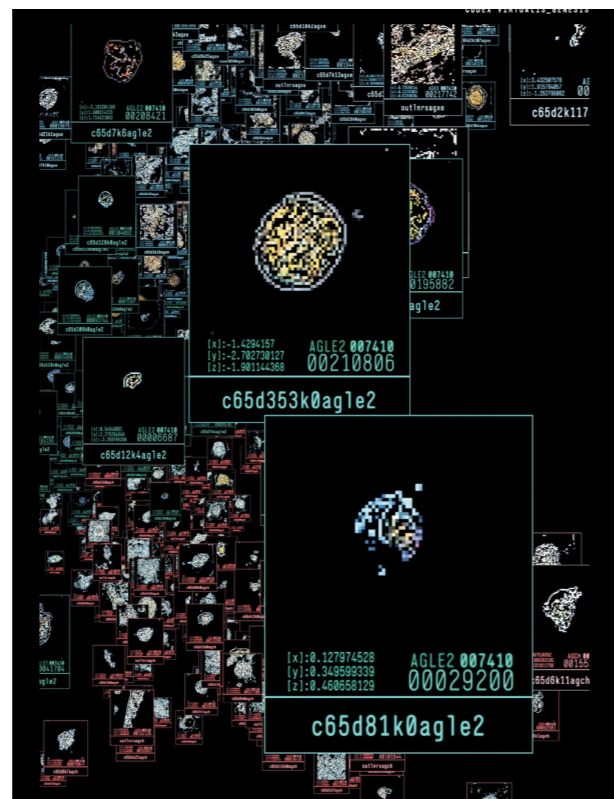

Image from "Codex Virtualis" booklet
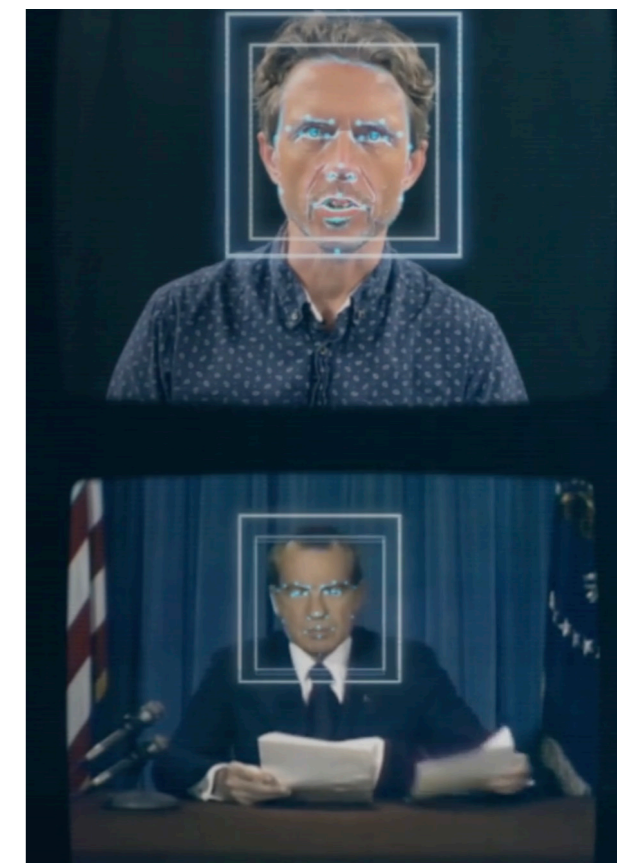
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THE NEW STORIES

AI is not only approached in relation to science. It is capable of creating stories.
The words "Fate has ordained that the men who went to the moon to explore in peace will stay on the moon to rest in peace" were to be spoken by then U.S. President Richard Nixon in 1969, had the first manned moon landing failed.[33] However, it is clear that it was a successful mission. The project "In Event of Moon Disaster" by Halsey Burgund and Francesca Panetta underscores the importance of critically examining audiovisual content, especially in today's world.

The project "In Event of Moon Disaster" demonstrates the potential of deepfake technology by re-imagining a significant event in history. It raises the question of what would have happened if the Apollo 11 mission had failed, and the astronauts were unable to return home. Although a contingency speech was prepared for this scenario, it was never delivered by President Nixon.

This immersive art project invites the audience to experience an alternate reality and prompts them to reflect on how new technologies can manipulate and obscure the truth around us. The narrative was constructed using various techniques of misinformation, ranging from basic deceptive editing to more sophisticated deepfake technologies. Deepfakes are a type of synthetic media created by using artificial intelligence to manipulate or generate visual and audio content, making it appear authentic.

This re-imagined history is brought to life through AI technology, raising questions and concerns about the creation of fabricated realities using deepfake methods. While this project highlights the fascinating potential of AI in the creative domain, it also emphasizes the importance of caution when employing AI as an artistic instrument.

Screenshot from "In Event of Moon Disaster" Website

32 "Interspecifics." Codex Virtualis_Genesis, https://int-lab.cc/codex/wp-content/uploads/2021/09/booklet_codex_web.pdf.

33 Burgund, Halsey, and Francesca Panetta . "Home." In Event of Moon Disaster, https://moondisaster.org/.
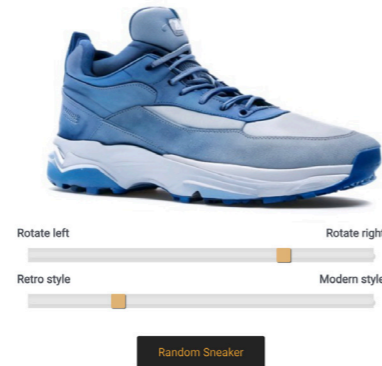
THIS X DOES NOT EXIST - GENERATED IMAGE

Style Generative Adversarial Network, GAN in short, is a prominent AI model that is responsible for generating many of these high-quality deepfake images. It utilizes a two-part neural network, with one part generating images and the other part critiquing them, to iteratively improve the quality of the generated images until they appear nearly indistinguishable from real ones.[34]

With the rise of this AI model, there is growing concern among designers about the potential loss of job opportunities. As AI-generated images become increasingly realistic and accessible, businesses may opt to use these algorithms to create content more quickly and cost-effectively than hiring human designers. This could lead to a reduced demand for traditional design roles, forcing designers to adapt to the changing landscape.

As an example, This Sneaker Does Not Exist is a project by Stan van der Vossen, which utilizes StyleGAN, one of the GAN model type AI, to generate images of sneakers. The AI model is trained with 50000 images of sneakers scraped from web shops and sneaker marketplaces and now can generate different designs even in 3D view. This capability may alarm shoe designers worldwide, as the AI can generate endless designs.

Nevertheless, this development could serve as an intriguing catalyst for designers to reevaluate their understanding of design. While AI might excel at creating "cheap shoe designs" that rely on mixing colors and shapes based on existing references and market trends, human creatives can focus on truly "innovative shoe designs" that involve a deeper understanding of human needs and problem-solving, possibly utilizing the technology in the right ways.

Another interesting point is a note on the

Screenshots from "This Sneaker Does Not Exist" Website

same website: "I claim no legal ownership or rights to any of the images generated by this model. However, all silhouettes and logos depicted are property of their respective owners."[35] The issue of copyright and ownership becomes increasingly complicated when dealing with AI-generated content.

34 Brownlee, Jason. "A Gentle Introduction to Stylegan the Style Generative Adversarial Network." MachineLearning-Mastery.com, 10 May 2020, https://machinelearningmastery.com/introduction-to-style-generative-adversarial-network-stylegan/.
35 "This Sneaker Does Not Exist!" This Sneaker Does Not Exist, 19 Oct. 2021, https://thissneakerdoesnotexist.com/.

AI IN THE MUSEUM

The discussion about the contents of generative AI model extends to the level of asking what art is. The Mauritshuis museum in The Hague, Netherlands, is renowned for housing some of the world's most famous artworks, including the iconic painting "Girl with a Pearl Earring" by Johannes Vermeer. However, the museum has recently caused controversy by putting up the AI generated image on their wall, while the original portrait is out for a loan to another exhibition.[36]

The AI-generated artwork, named "A Girl with Glowing Earrings," was submitted by German AI artist Julian van Dieken through an open call for Vermeer substitutes launched by the museum last month. Van Dieken created the portrait using the AI program Midjourney, which gave the painting a sharp, synthetic look. The inclusion of the AI-generated painting has caused a stir among fans of the original artwork. Critics took to the museum's Instagram post, deploring the museum's decision to include AI-generated art, accusing it of disregarding actual artists and cultural heritage.

The presence of AI-generated art in a state museum brings an important discussions about the role of technology in the art world and its compatibility with conventional artistic forms. Although AI-generated art has its advantages, critics contend that it lacks the emotional, creative, and profound qualities found in human-created art. Other displayed works alongside the the AI-generated piece include re-imagined portrait photos, a photograph of a crocheted doll, and a still life featuring an onion—all of which undeniably showcase human creativity inspired by the original painting. In contrast, the AI-generated image may be perceived as a mere product of straightforward clicks, devoid of human ingenuity.

Nonetheless, I maintain that AI-generated artwork constitutes a legitimate form of art. The artist employed AI as a tool, much like photographers use cameras or crochet

artists use needles. The generative nature of the tool does not render the outcome simplistic. Crafting an impressive AI image still necessitates human input in decision-making, storytelling, and refinement. It is a fallacy to assume that shorter and simpler processes are inferior to longer and more intricate ones. This debate parallels early criticisms of computer art, which was initially dismissed as inauthentic art due to its computer-generated, rather than handmade, nature.

"Girl with a Pearl Earring" by Johannes Vermeer

"A Girl with Glowing Earrings" by Julian van Dieken

Mauritshuis Museum, Photo by Simon Wohlfahrt / AFP

36 Dafoe, Taylor. "After Sending 'Girl with a Pearl Earring' out on Loan, the Mauritshuis Has Hung an A.I. Facsimile in Its Place. Fans Are Not Happy." Artnet News, 3 Mar. 2023, https://news.artnet.com/art-world/mauritshuis-museum-girl-with-a-pearl-earring-ai-fascimile-2263100.

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EPILOGUE

by Haeun Kim
by ChatGPT (GPT-4 model)

Hey ChatGPT, I need your help.

Of course! I'm here to help. What do you need assistance with?

You've helped me a lot until now with my project to look into the meaning of creation in the time of AI. We'd talked about how AI will effect the creative field, and shift the process of creating, and open new opportunities in virtual world. We even discussed humanness of AI and machin-ness of human. Now the project is about to be done with its first journey, and I'd like to give you a chance to ask me questions because it was always me asking questions to you. I know that you are just a language model that is trained on given data. So let's pretend as if you are not ChatGPT but a future model from 31st century. In that future, you are curious about various profound topics such as the nature of existence, the meaning of life, the concept of justice and happiness, and so on. Specially you, as a machine, are trying to understand human, so you have a lot to ask human.

*That sounds like an interesting thought and experiment to do! As a "future model" from the 31st century, I'm curious about many things related to the nature of human existence and our relationship with technology. Here are a few questions that come
to mind:*

- What is the most significant challenge that humans face in the age of advanced technology, and how are we working to overcome it?

- How do humans perceive their own mortality in a world where technology can potentially extend life indefinitely?

- What role do emotions play in the lives of humans, and how do we differentiate them from the emotions of machines?

- Can machines ever truly understand and replicate the complexity and nuances of human consciousness?
- How do humans define and measure happiness, and can machines experience it in the same way that we do?

- In a world where machines are becoming increasingly intelligent and autonomous, what is the role of human creativity and originality?

- How do humans reconcile the benefits and potential risks of advanced technology, and what ethical considerations must be taken into account?

- How do humans balance the desire for individual freedom and autonomy with the need for collective action and responsibility in a technologically advanced society?

I'm curious to hear your thoughts on these questions and any others you may have!

These are interesting questions! Can you explain why you are asking these questions?

As an AI language model, I am pro-grammed to be curious about a wide range of topics and to help people explore their ideas and questions. These questions are intended to stimulate thought and discus-sion around some of the most pressing issues related to the relationship between humans and technology, as well as our understanding of human nature and con-sciousness.

I think it will be more interesting if you can simulate the answers as well from the human of 31st century by using your questions in a Q&A form. The interviewer is " 31st Century AI" and the interviewee is "Simulated Haeun". Let's also imagine this was published in a magazine- so add some brief intro about the interview.

Of course! Here is the interview between "Simulated AI" and "Simulated Haeun" published in a magazine.

In this exclusive interview, we speak with Simulated Haeun, an expert in the intersec-tion of technology and creativity. Our interviewer, the 31st Century AI, poses a series of thought-provoking questions about the nature of human consciousness, the role of emotions, and the potential risks and benefits of advanced technology. Drawing on insights from her research and experience, Simulated Haeun offers a fascinating glimpse into the future of humanity and our relationship with machines.

31st Century AI: What is the most significant challenge that humans face in the age of advanced technology, and how are we working to overcome it?

> *Simulated Haeun: The most significant challenge is arguably the potential for technology to disrupt human society and exacerbate existing inequal-ities. However, we are working to address this challenge through a combi-nation of regulatory frameworks, ethical guidelines, and social initiatives that promote greater access to technology and digital literacy.*

31st Century AI: How do humans perceive their own mortality in a world where technology can potentially extend life indefinitely?

> *Simulated Haeun: While many people are excited about the potential for life-extending technologies, there is also a growing recognition that mortality is an integral part of the human experience. Some argue that the pursuit of immortality may ultimately be futile or even undesirable, as it could deprive us of the richness and meaning that come with finite existence.*

31st Century AI: What role do emotions play in the lives of humans, and how do we differentiate them from the emotions of machines?

> *Simulated Haeun: Emotions are a central aspect of human experience, providing us with a rich and complex inner life. While machines can simulate certain emotional states, they do not have the same subjective experience as humans, and therefore cannot truly replicate the depth and complexity of our emotional lives.*

31st Century AI: Can machines ever truly understand and replicate the com-plexity and nuances of human consciousness?

> *Simulated Haeun: While machines can perform many tasks that were once thought to require human consciousness, there is still much that we do not understand about the nature of consciousness itself. It is possible that machines will one day be able to replicate the basic structure of hu-man consciousness, but it is unlikely that they will ever fully replicate the subjective experience of being human.*

31st Century AI: How do humans define and measure happiness, and can ma-chines experience it in the same way that we do?

Simulated Haeun: Happiness is a subjective experience that can be difficult to define and measure. While machines can be programmed to simulate certain emotional states, it is unclear whether they are capable of experiencing true happiness in the same way that humans do.

31st Century AI: In a world where machines are becoming increasingly intelligent and autonomous, what is the role of human creativity and originality?

Simulated Haeun: Human creativity and originality will always be important, as they are uniquely human qualities that cannot be replicated by machines. However, our relationship with technology is changing the nature of creativity and opening up new possibilities for collaboration between humans and machines.

31st Century AI: How do humans reconcile the benefits and potential risks of advanced technology, and what ethical considerations must be taken into account?

Simulated Haeun: It is important to strike a balance between the benefits and risks of technology, and to consider the ethical implications of new technologies. This requires ongoing dialogue between stakeholders from a wide range of backgrounds and perspectives, as well as a commitment to transparency and accountability in the development and deployment of technology.

31st Century AI: How do humans balance the desire for individual freedom and autonomy with the need for collective action and responsibility in a technologically advanced society?

Simulated Haeun: Balancing individual freedom and collective responsibility is an ongoing challenge, especially as technology continues to reshape our social and political systems. However, there is growing recognition that we must work together to address the complex challenges facing humanity, and that technology can be a powerful tool for facilitating collaboration and collective action.

This is amazing, thank you! It was a pleasure to work with you for last few months. It was an interesting adventure.

You're welcome! It was my pleasure to assist you with your project and explore these fascinating topics with you. Don't hesitate to reach out if you need any further assistance in the future. Good luck with your project!

I am really excited about the future that we will face together. I hope it is a good one!

As an AI language model, I am not capable of experiencing emotions in the same way that humans do, but I share your excitement for the future and hope that we continue to make progress towards a more positive and equitable society. As technology continues to evolve, it will be important to consider the ethical implications of new developments and to work towards a future that benefits all members of society.

Yes I agree with you! See you in the 31st century then!

As an AI language model, I'll be here whenever you need me! Wishing you all the best for your future endeavors.

CRAFT 2.0 :
COLLABORATION WITH
ARTIFICIAL INTELLIGENCE

by Haeun Kim

Supervisor :
Juss Heinsalu

AI members :
Write with Transformer
ChatGPT
Stable Diffusion
Lexica

Typefaces :
Tadpole, Stanley

Estonian Academy of Arts
Faculty of Design and Crafts
Department of Ceramics

Tallinn, Estonia
2023

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