

October 2023

Hands Are Hard: Unlearning How We Talk About Machine Learning in the Arts

Oscar K. Keyes
Virginia Commonwealth University, okkeyes@gmail.com

Adam Hyland
University of Washington, achyland@uw.edu

Follow this and additional works at: https://digitalscholarship.unlv.edu/tradition_innovations



Part of the [Art Practice Commons](#), [Digital Humanities Commons](#), and the [Interdisciplinary Arts and Media Commons](#)

Recommended Citation

Keyes, Oscar K. and Hyland, Adam (2023) "Hands Are Hard: Unlearning How We Talk About Machine Learning in the Arts," *Tradition Innovations in Arts, Design, and Media Higher Education: Vol. 1: Iss. 1*, Article 4.

Available at: https://digitalscholarship.unlv.edu/tradition_innovations/vol1/iss1/4

This Article is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Article in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Article has been accepted for inclusion in Tradition Innovations in Arts, Design, and Media Higher Education by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.

Prompt: a sea of hands

Hands are Hard:

*Unlearning How We Talk About
Machine Learning in the Arts*

Adam Hyland | University of Washington

Oscar Keyes | Virginia Commonwealth University

Tradition-Innovations in Art, Design, and Media Higher Education, Volume 1, Issue 1 2023

Special Issue on *Artificial Intelligence and Possible Future for the Arts*.



About

This instructional art object guides you through a series of poetic prompts, designed to investigate the phenomenon of “bad hands” created by generative artificial intelligence (GenAI). As one progresses through the collection of Fluxus-style scores, the text will also demonstrate how the encounter between these systems, [the mirror of language](#), and us is fuzzy.

hands are hard

Steps: 35, Sampler: Euler a, CFG scale: 2.5, Seed: 671884549, Size: 512x512, Model hash: 4c86efd062, Model: SDv1.5, Version: v1.3.1

Acknowledgements

The current state of image generation is deeply embedded in and indebted to tools and datasets built on private images and artistic works taken without consent. Even tools that promise to take an ethical approach, like Adobe's Firefly, are still grappling with community concerns about [creator compensation and options to opt-out of training datasets](#).

As such, at this time, it is impossible to “do no harm” when using these types of tools. Instead we have opted for a path of harm reduction while still acknowledging that these tools extract from exploited [artists](#), [digital laborers](#), and [environmental resources](#) while also perpetuating forms of discrimination, such as [racism](#), [sexism](#), and [many others](#).

Inspired by Nick Briz's [Thoughts on Glitch\[Art\]v2.0](#), we intend to draw attention to and inspire action against the biases and injustices embedded in these text-to-image generators through their creative (mis)use.

Prompt: There is no ethical generation under capitalism |
Steps: 35, Sampler: Euler a, CFG scale: 2.5, Seed: 1011943438,
Size: 512x512, Model hash: 4c86efd062, Model: SDv1.5, Version:
v1.3.1



**THERIS IIS NO
GNTHIH AITCTAN
COP ANREATINA**



Grappling with image generation

In addition to the legality of training datasets, [ethical concerns arise in generation and use itself](#). Deceptive media used for [political propaganda](#) or deepfakes in [non-consensual sexual images](#) present the urgent problem of discerning synthetic or manipulated images.

This resource is inspired by how “bad hands” were used as a form of verification—helping us determine, with effort, that [this viral image of The Pope was created using generative AI](#). How long we may rely on this method is unknown. “Bad hands” are disappearing as generators improve through public use and feedback.

Deceptive imagery is not new. However, we should not allow ourselves to be cynical enough to imagine these tools create no new problems. The airbrush and mask tool in Photoshop took their name and form from physical analogues. Nevertheless we can recognize the epochal impact of digital image creation; not just an extension of practice but something novel.

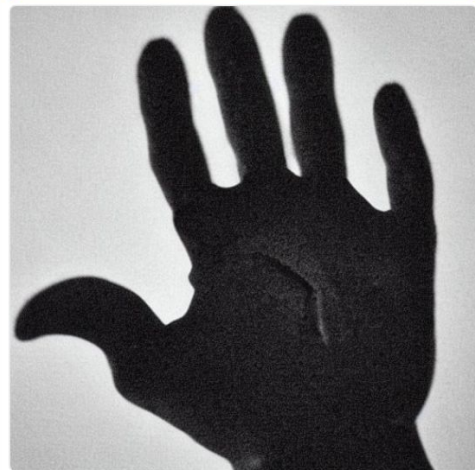
As Alan Turing said of computing in 1949, this is only the shadow of what is going to be.

[Balenciaga Pope](#) by Pablo Xavier, Midjourney, 2023.

Prompt: Catholic Pope Francis. Balenciaga puffy coat. Streets of Paris.

the ghost of a hand

Generate image



Notes on Tool Selection

For our text-to-image generator, we chose the [Stable Diffusion 1.5 model](#), as it is available in many implementations, including those which do not require expensive GPU (Graphics Processing Unit) time.

The 1.x model line was widely released to the public despite including [nude](#), [medical](#), and copyrighted images in the training data. It and many thousands of different models based directly on that release are embedded on millions of machines worldwide. We want you to confront image generation at the precipice.

For our text generator, we chose **ChatGPT** mostly due to its popularity and ease-of-use for first time creators. Additionally, due to its extensive Internet scraping, it was useful for our remix purposes.

Remixing *Grapefruit*

In designing this piece, we were inspired by Yoko Ono's *Grapefruit* because of its instructional nature and its invitation for everyone to engage with art in their everyday life.

Additionally, we wanted to draw attention to the ways that GenAI can mimic artistic styles but not necessarily capture the essence of an artist's work. Due to the proliferation of *Grapefruit* across the Internet via articles, exhibitions, and reviews, it is an example of a text-based conceptual artwork that ChatGPT was able to "scrape" via the Internet.

We hope this homage-as-remix in collaboration with (and critique of) GenAI invites critical but creative play in a spirit that honors Ono's original text.

grapefruit, a hybrid of a lemon and an orange

Generate image





The Hands of Time ¹

One other important note about this resource is in reference to its own ephemerality. Even at the time of publication, the popular closed-source generator *Midjourney* has [vastly improved](#) hand generation.

Part of the goal of this resource is to document a moment in time, where the seams of the “black box” driving these systems are still visible. Through glitch art, we are able to explore and exploit these system errors to learn more about the nature of these machines.

Before the errors disappear altogether.

Further notes on “bad hands”

This instructional object only provides a narrow slice of the ever expanding discourse surrounding generative AI art.


Even with regards to the topic of “bad hands,” we wanted to highlight [Bruce Sterling’s lecture](#), delivered at the conference *AI for All: From the Dark Side to the Light*. His discussion of the phenomenon of “bad hands” provides a history of the technology alongside artistic interventions that are witty, profound, and timely.

We see our piece as a complimentary exercise to Sterling’s lecture and encourage artists to read the transcript in conversation with our creative prompts and critical propositions.

a "good hand" drawing a "bad hand"

Generate image





Now, let's talk about "bad hands."

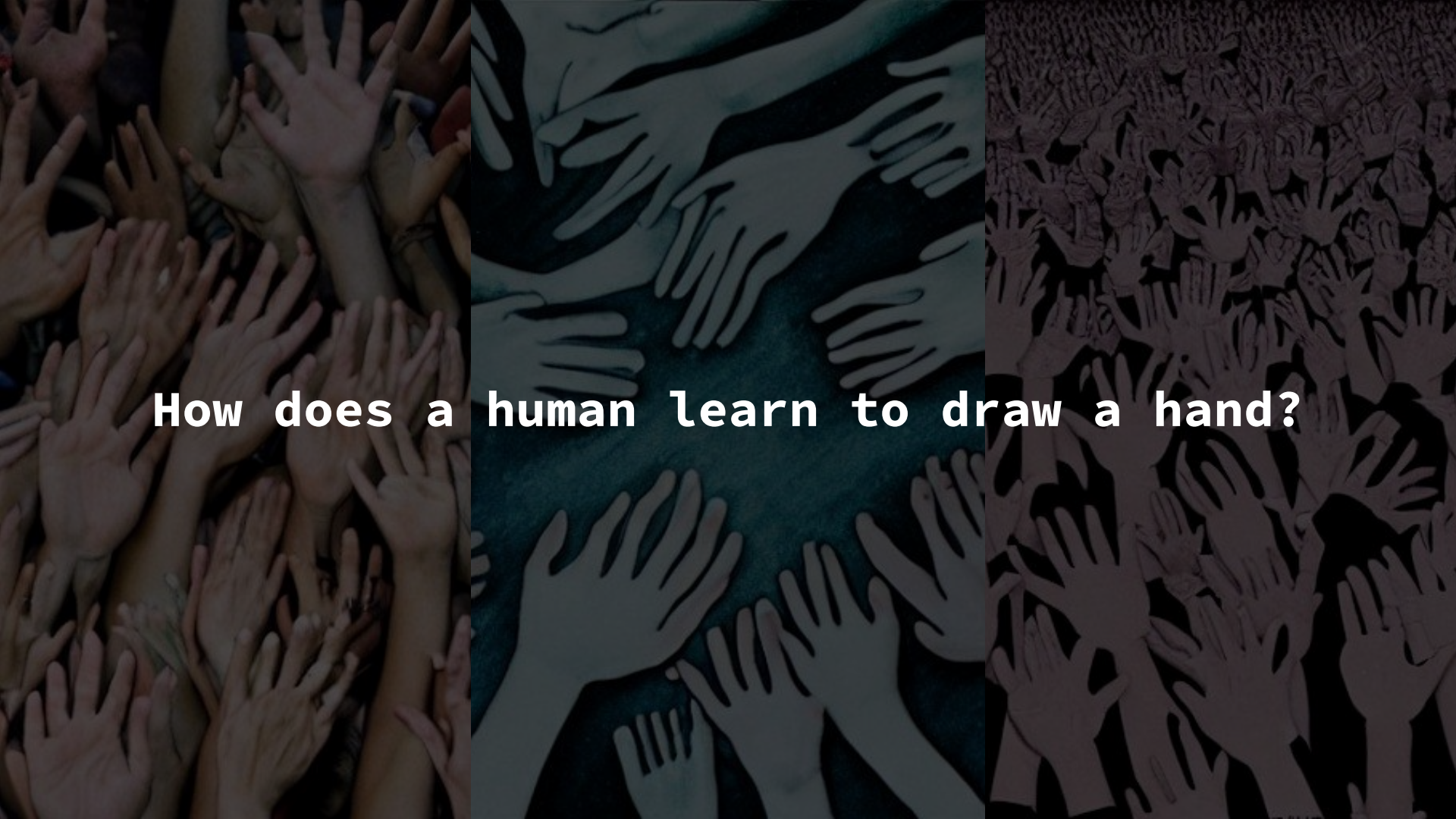


The five sections of this resource:

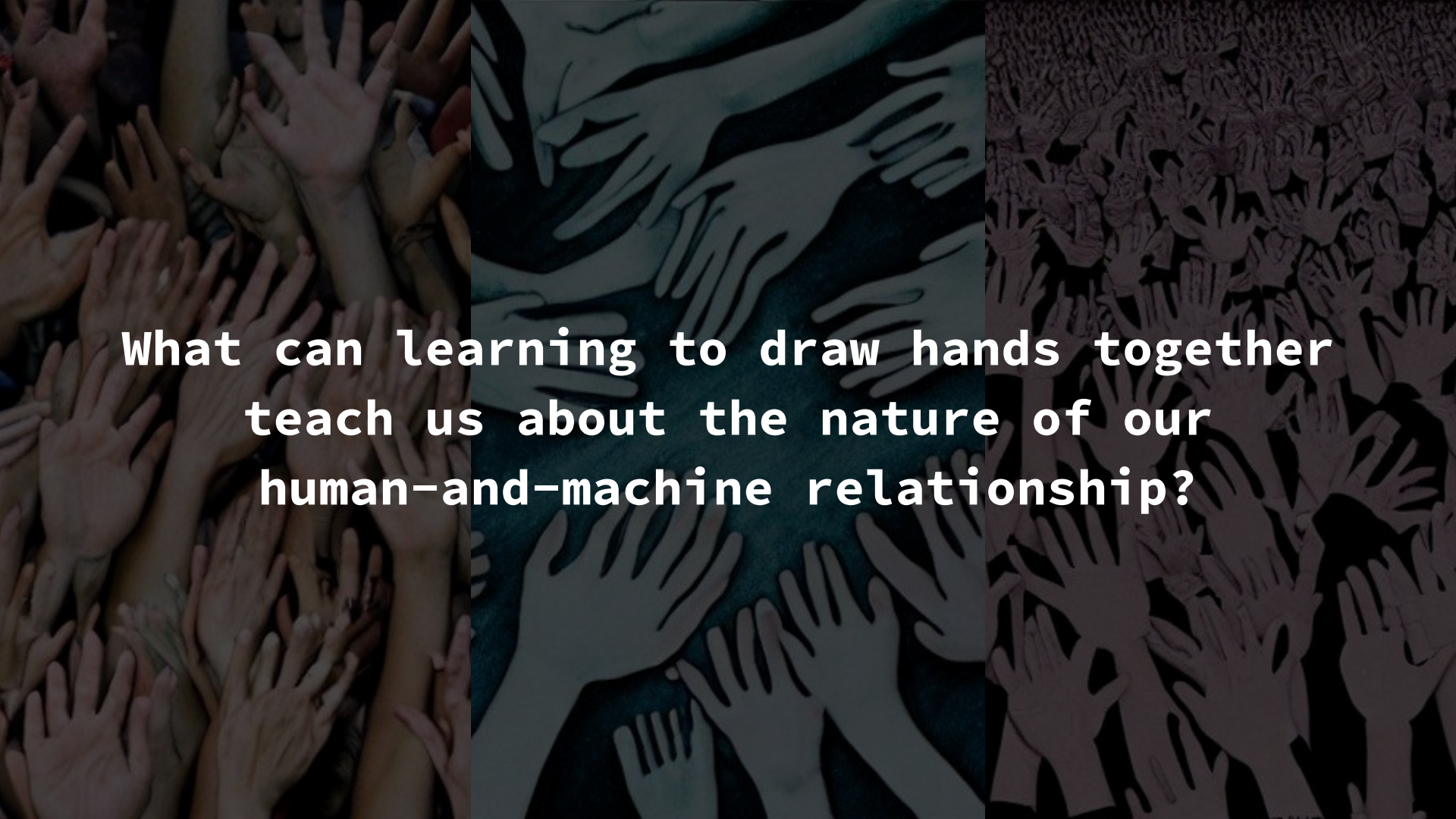
1. Why are hands hard to draw (for humans and machines)?
2. How did machines learn to draw hands from humans?
3. Learn to draw a hand from a machine.
4. Learn to draw a hand with a machine.
5. Reflect on how humans and machines learn to draw hands together.



How does a machine learn to draw a hand?



How does a human learn to draw a hand?



**What can learning to draw hands together
teach us about the nature of our
human-and-machine relationship?**



STEP 1:

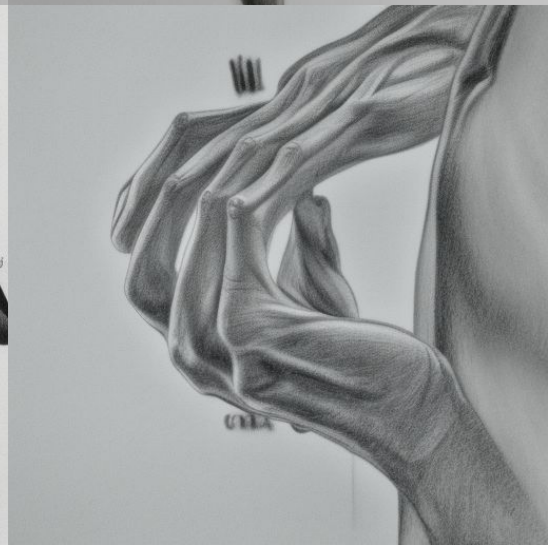
Why are hands hard to draw
(for humans and machines)?

“We cannot learn to draw a hand . . . We can only learn to see the different sizes and shapes which each new position shows, and try to draw them as they appear.”

Froehlich & Snow, *Text Books of Art Education*,
Book IV (of 7), 1904, p.37

Prompt: anatomically accurate medical drawing of a human hand, charcoal and paper, highly detailed medical illustration

Steps: 35, Sampler: Euler a, CFG scale: 5.5,
Seed: 2779129120, Size: 512x512, Model hash:
4c86efd062, Model: SDv1.5, Version: v1.3.1



Why hands?

When images generated by AI first began to circulate in mainstream news outlets, “bad hands” became a [tell-tale sign](#) of a [synthetic image](#).

Why did hands receive this focus rather than other parts of the body?

Why do these images of hands provoke such a reaction within us?

Why are hands so hard?

hands

Generate image



Faces (1)

This image is as anatomically incorrect as our hands illustration, but humans are great face recognizers, even as infants. We can even extract meaning from :(

We meet an image of a face halfway in a way we cannot one of hands.

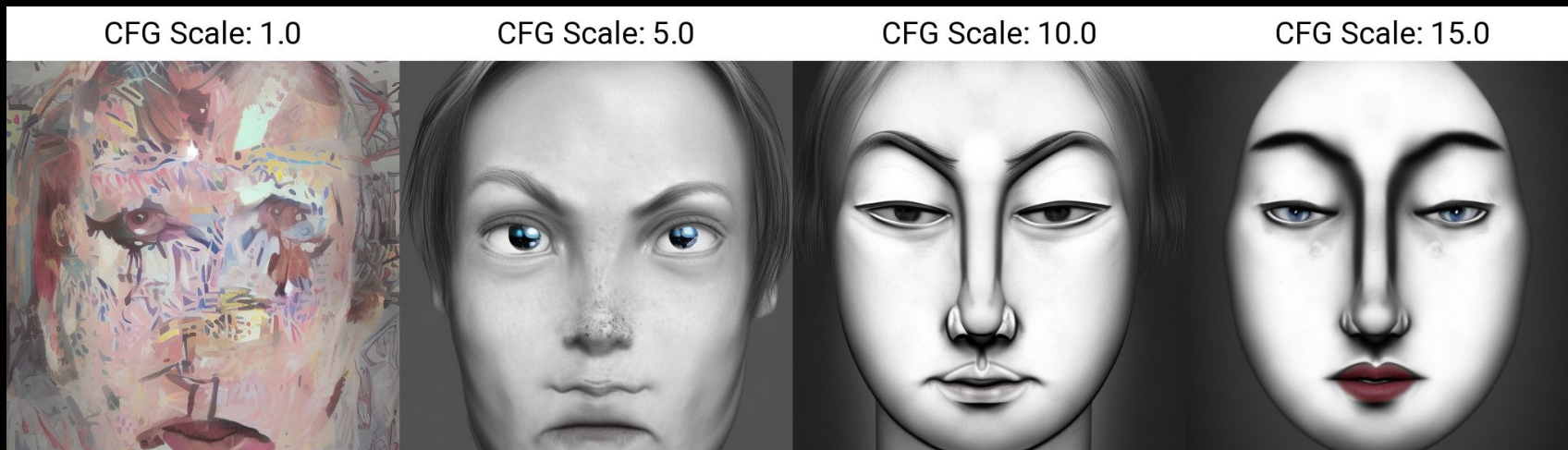
a human face

Steps: 20, Sampler: Euler a, CFG
scale: 5.5, Seed: 1134966009, Size:
512x512, Model hash: 4c86efd062,
Model: SDv1.5, Version: v1.3.1



Faces (2)

Stable Diffusion starts with an image of pure noise as the first step, with each step diffusing toward the prompt. Here, the parameter CFG Scale governs how dominant the prompt is at each step over the influence of noise. The CFG scale, or Classifier Free Guidance scale, is a parameter that controls the guidance provided to Stable Diffusion processes.



a human face

Steps: 33, Sampler: Euler a, CFG scale: 1.0, Seed: 2795298485, Size: 512x512, Model hash: 4c86efd062, Model: SDv1.5, Script: X/Y/Z plot, X Type: CFG Scale, X Values: "1, 5, 10, 15", Version: v1.3.1

Even at a CFG of one, we can still make a face out.

Figures (1)

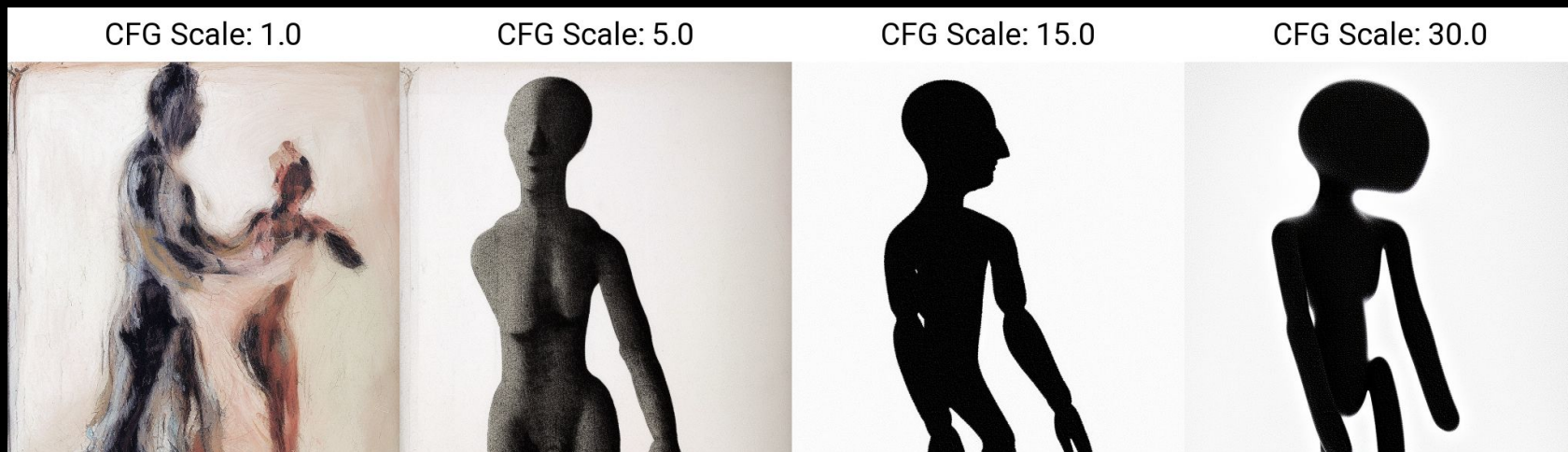
Interestingly, a broader prompt like human “figures” tends to avoid the matter of hands altogether. Being pushed out of frame or tucked away into pockets. Hands become hidden and anytime a system tries to hide something, it’s worth taking a closer look.

Human figures generated in Stable Diffusion and cherry-picked to [show off the capabilities of the 2.x models](#) by the head of Stability AI, Emad Mostaque.



Figures (2)

At higher CFG scales, an image from the prompt “the human figure” tends towards abstraction and removes any complexity related to hands. The images retain, however, an apperceptable human-like figure.²



the human figure

Steps: 33, Sampler: Euler a, CFG scale: 1.0, Seed: 2146924043, Size: 512x512, Model hash: 4c86efd062, Model: SDv1.5, Script: X/Y/Z plot, X Type: CFG Scale, X Values: "1, 5, 15, 30", Version: v1.3.1

Why are hands hard?

One of the main reasons that AI struggles to generate accurate images of hands relates to its limited understanding of how a hand operates in the real world. These models only understand a hand as captured in a still image.

Even humans, who often have a real world, real-time model ready-to-hand, struggle with connecting image and anatomy.

How could an image data set ever teach it how finger joints work or how a palm bends into different shapes?

After a brief detour we'll look at how communities of users and engineers teach machines to draw hands.

"Anatomically correct hands"

Steps: 35, Sampler: Euler a, CFG scale: 2.5,
Seed: 671884549, Size: 512x512, Model hash:
4c86efd062, Model: SDv1.5, Version: v1.3.1





Now let's make some "bad hands."



Drawing a Hand is Hard: *A Grapefruit-Inspired Detour*

Co-written by ChatGPT & Humans

prompt: a hand drawing a grapefruit

Drawing a Hand is Hard:

A Grapefruit-Inspired Detour(2)

Co-written by ChatGPT & Humans

The following instructions were generated by ChatGPT, and then curated and modified by the authors.

In order to generate the initial text, the authors fed ChatGPT the first prompt and then asked the AI to rewrite it using the next prompt.

For this particular set of instructions, the text was fed back into ChatGPT multiple times. All the prompts are listed on the right.

The instructions begin on the next slide.

As you move through them, we encourage you to generate images of “hands” of all kinds.

You may use [Stable Diffusion](#), or any other available image-to-text generator.

Prompt 1: Can you explain why hands are hard to draw?

Prompt 2: Can you write this explanation as a set of instructions?

Prompt 3: How would you write these instructions for a machine?

Prompt 4: Rewrite these instructions in the style of *Grapefruit* by Yoko Ono.

Prompt 5: Rewrite and remove the rhymes.*

* The authors note this step was unsuccessful.



Drawing a Hand is Hard:

A Grapefruit-Inspired Detour(3)

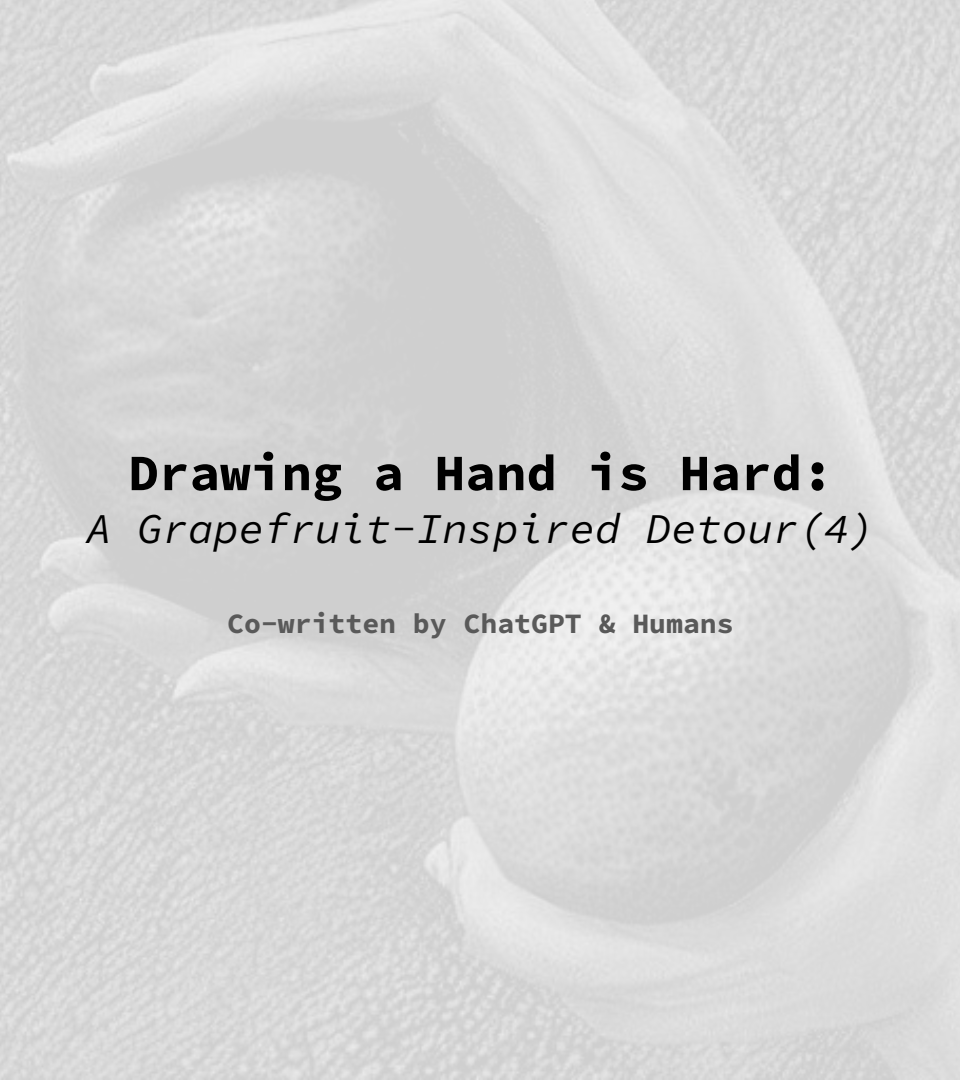
Co-written by ChatGPT & Humans

Engage the machine's circuits with the essence of hand, where bones and tendons intertwine.

Immerse in data, unraveling the intricate tapestry of its structure divine.

Program the machine's movements with delicate precision, a dance of grace.

Optimize algorithms, fine-tuning the motor control to evoke the artist's trace.



Drawing a Hand is Hard:

A Grapefruit-Inspired Detour(4)

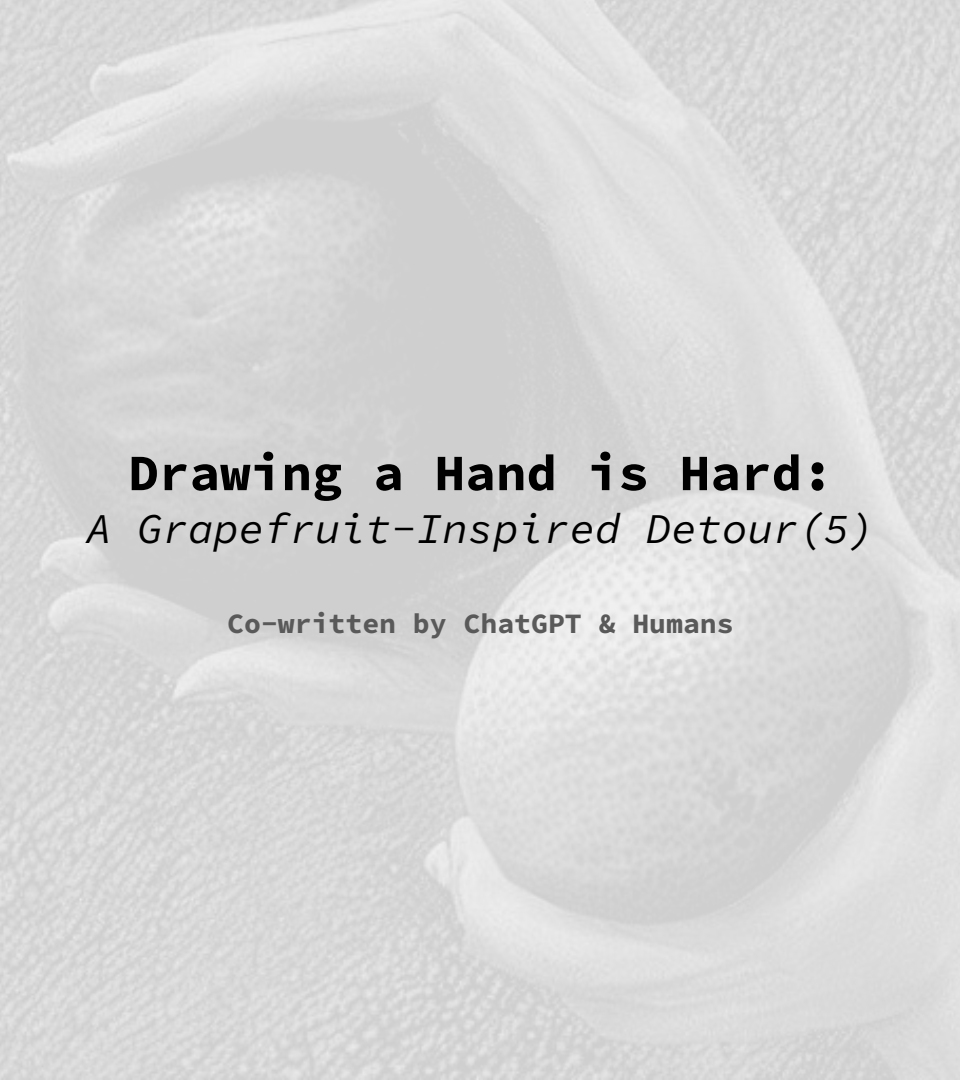
Co-written by ChatGPT & Humans

Integrate the gift of sight,
algorithms that perceive the
hand's living poetry.

Extract its features, the finger's
dance, joint angles, and shapes
that unfold artistry.

Infuse the machine with the magic
of perspective, a lens to view
hands from diverse angles.

Let algorithms adapt, distorting
proportions, understanding
foreshortening's tangles.



Drawing a Hand is Hard:

A Grapefruit-Inspired Detour(5)

Co-written by ChatGPT & Humans

Allow the machine to appreciate variations, the hand's symphony of proportions unique.

Adjust algorithms with care, honoring finger lengths, thickness, the spirit they speak.

Awaken the machine's soul to the language of emotions, the hand's silent expression.

Program algorithms to imbue gestures with sentiment, each curve a moment's impression.



Drawing a Hand is Hard:
A Grapefruit-Inspired Detour(6)

Co-written by ChatGPT & Humans

Initiate the machine's learning journey, an ever-evolving pas de deux with knowledge's might.

Embrace machine learning's tender touch, optimizing algorithms in the glow of art's light.

Engage in the cycles of growth, each stroke an opportunity for revelation.

Seek feedback from sages and dreamers alike, refining the machine's path with dedication.

A grayscale photograph of a hand holding a grapefruit. The hand is positioned at the top and sides, with fingers gently gripping the fruit. The grapefruit is the central focus, showing its characteristic bumpy texture. The background is a plain, light-colored surface.

Drawing a Hand is Hard:

A Grapefruit-Inspired Detour(7)

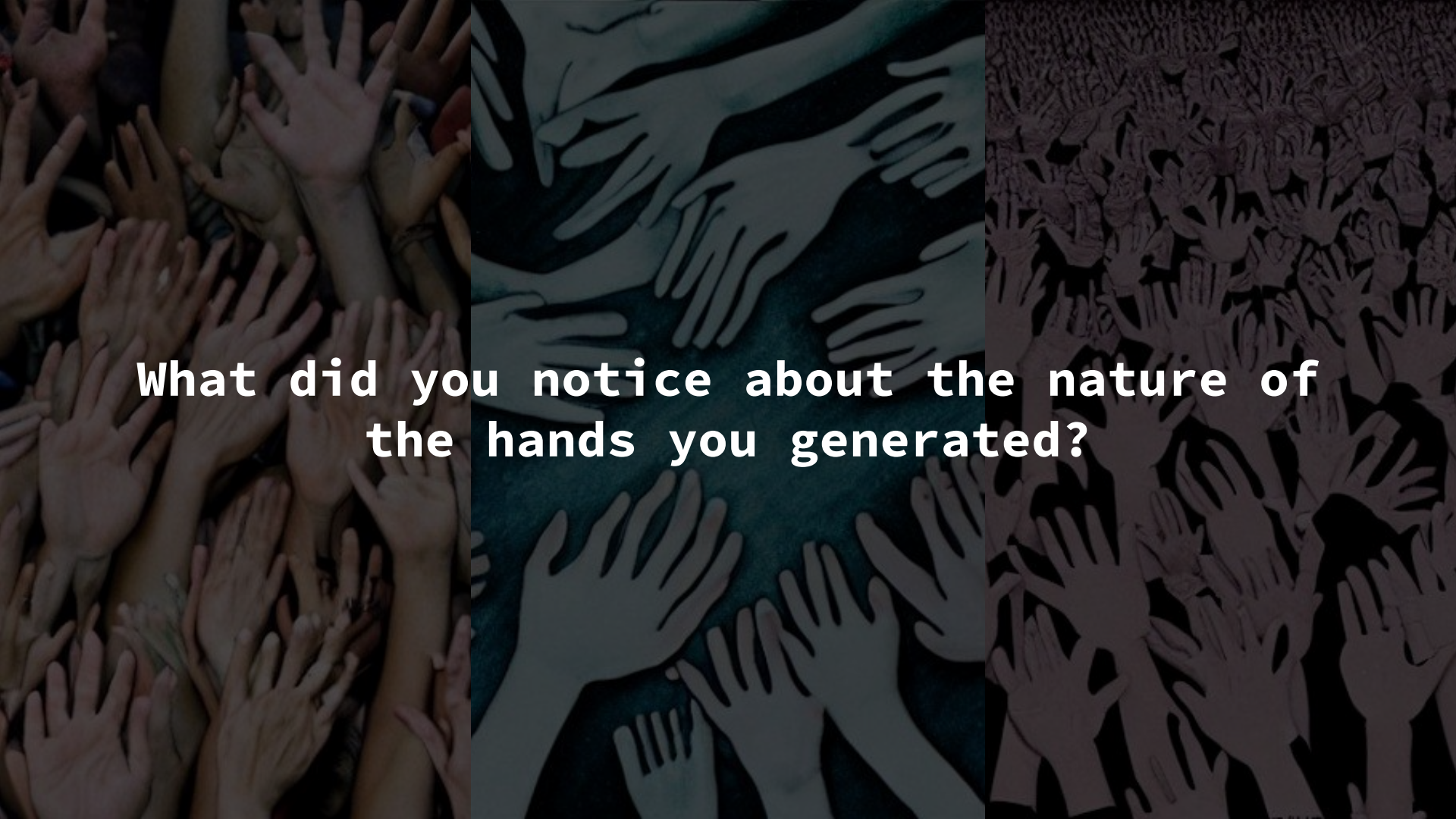
Co-written by ChatGPT & Humans

Allow the machine's spirit to soar, gathering wisdom from each attempt, learning from every score.

Continually nurture its artistry, updating its being, capturing the hand's essence, forevermore.

In the realm of machine's creation, algorithms and data intertwined,

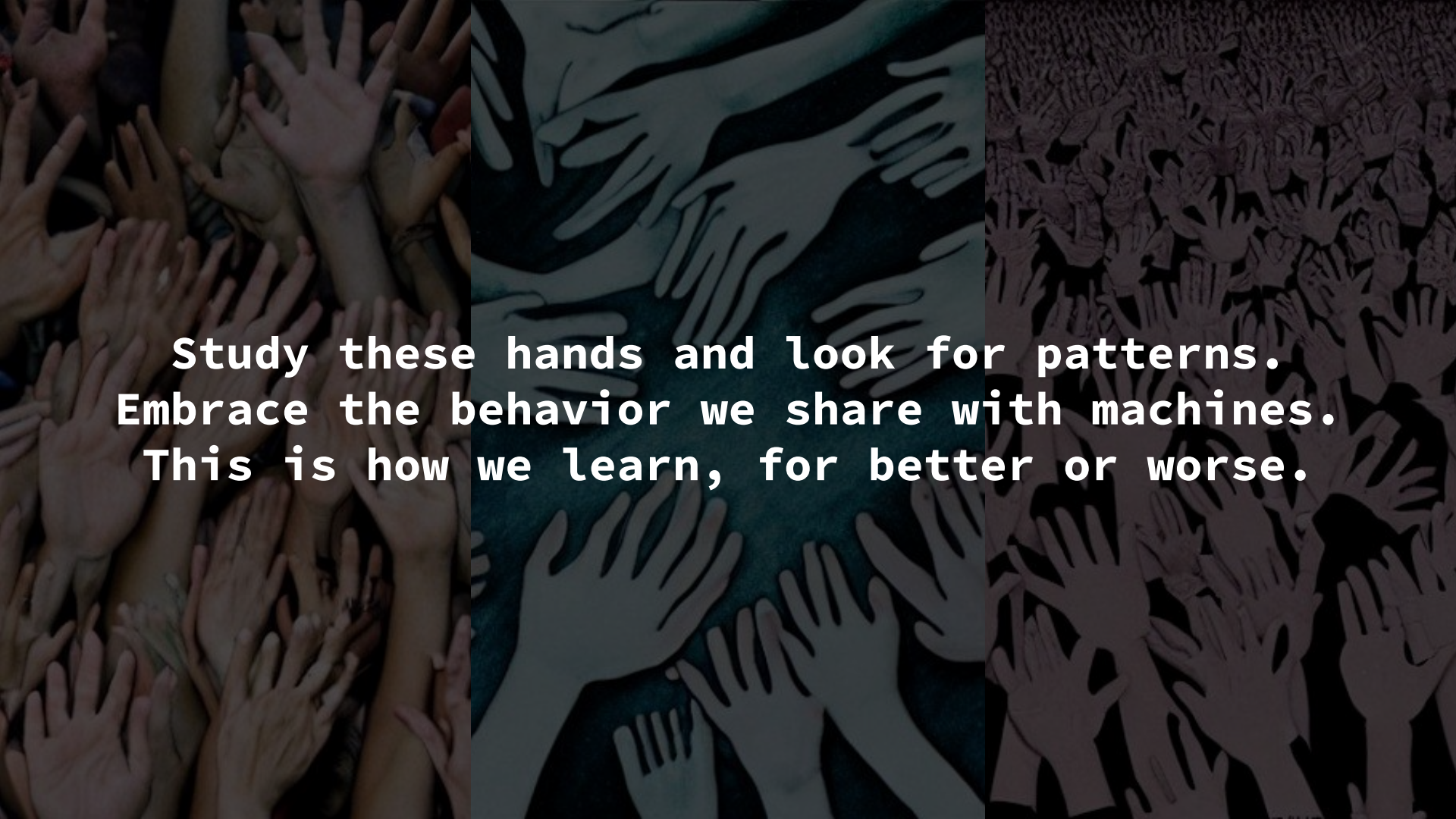
With each stroke and computational embrace, the art of drawing hands, the machine shall find.



What did you notice about the nature of the hands you generated?



Was it hard to generate a hand in the way that you intended or envisioned?



**Study these hands and look for patterns.
Embrace the behavior we share with machines.
This is how we learn, for better or worse.**



STEP 2:

How machines learned to
draw hands from humans

How does the AI even know what a “hand” is? (1)

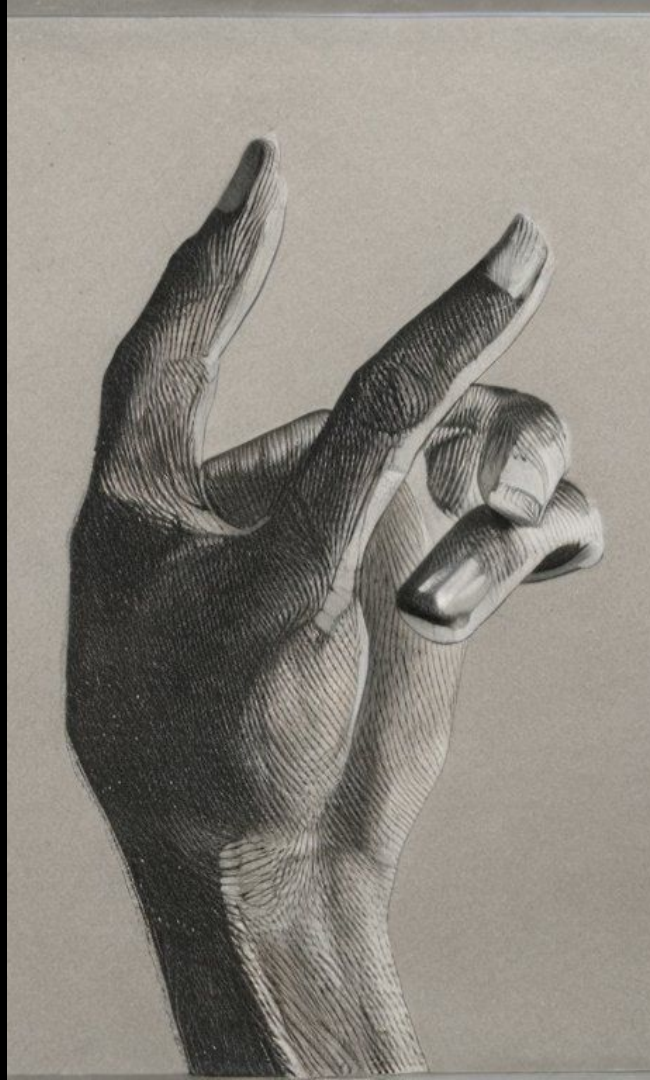
This section dives a little bit deeper into some of the technical backend elements of generative AI. The aim of this step is to demystify some of the process, especially for artists outside of a technology-based practice.

It has been organized into the following subsections:

1. Pre-training
2. Fine-tuning
3. Embeddings
4. Community biases

Prompt: a hand

Negative prompt: poorly drawn hands, poorly rendered hands



How does the AI even know what a “hand” is? (2)

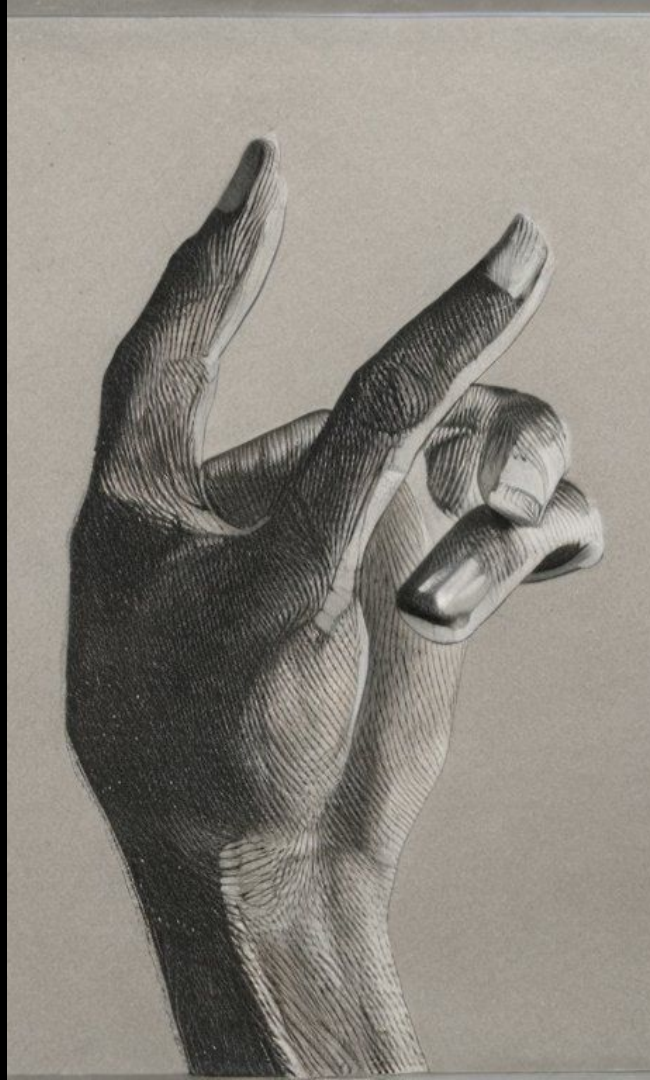
Text-to-image generators use a form of machine learning known as **neural networks** (sometimes called Deep Learning).

Traditional machine learning techniques sort through datasets using methods like classification and clustering, and requires minimal human interference.

Neural networks, on the other hand, attempt to mimic the ways our actual human brains work. More human intervention is needed earlier in the training process to help “teach” the machines how to see like us.

Prompt: a hand

Negative prompt: poorly drawn hands, poorly rendered hands



Pre-training models (1)

Pre-training the model is the initial learning phase, in which an incredible amount of data is used to train the entire foundation of the generative AI model.

For [text-to-image generative AI models](#), this is the phase where huge data sets of images and their captions are fed into a neural network. At this stage, the machine is left largely to its own devices for long periods.

The result is several layers of “**concept association**,” which is how the AI “learns” what words are connected with which images.

Hands with all of their various shapes, do not lend themselves well to this process.

Prompt: a million hands



Pre-training models (2)

A few things to note about pre-training:

- This step requires enormous capital and investment, often in the form of a giant corporation or a nation state.
- These pre-training datasets are where much of the initial biases are encoded into the machine learning algorithm.
- Additionally, AI is now often used to generate the text for captions, as it is more efficient than humans describing these images. In short, AI now feeds itself.
 - BLIP (Bootstrapping Language-Image Pre-training): Is a vision-language AI that captions an image in natural language.

Prompt: a million hands



Fine-tuning models

Fine-tuning is the phase in which humans intervene to help refine the results generated by the neural networks (c.f. fine-tuning for semantic learning in [remote sensing](#)).

A specific subject areas (like hands) is selected and the model is trained again to update those last layers on this new image concept association under human supervision.

WITHOUT an underlying concept association in the model, fine tuning will fail.

Prompt: nail filing

Negative prompt: bad_hands



Embedding (1)

If pre-training a model is too cost-prohibitive and fine-tuning is limited in its abilities to correct the machine's output, what other methods exist for improving the generation of hands?

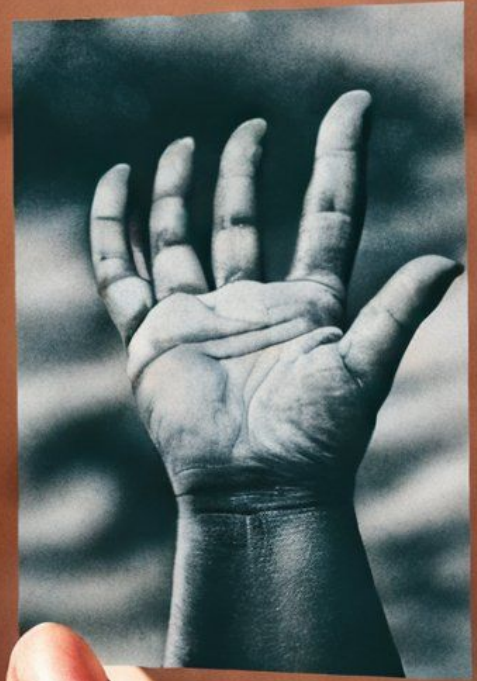
The answer is a technique known as **embedding**.

Embeddings are small-scale mappings ([An Image is Worth One Word: Personalizing Text-to-Image Generation using Textual Inversion](#)) of a categorical variable ("hands") and to a scale of continuous numbers. In essence, a sliding scale of (more "hands") to (less "hands") is created.

The advantage of embedding is that unlike pre-training which requires massive amounts of data, only a few dozen images are needed.

What does this mean for a community teaching machines to draw hands?

Prompt: a hand holding an image of a hand



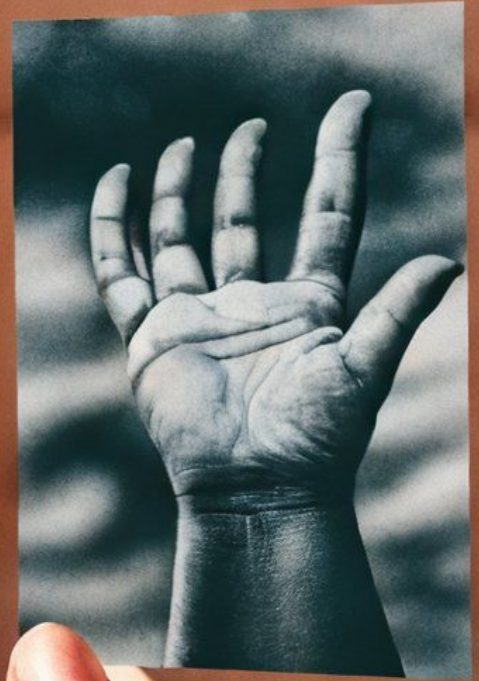
Embedding (2)

Community members, just weeks after the release of Stable Diffusion, developed an embedding known as “bad prompt,” (community commentary [Part 1](#), [Part 2](#), [Part 3](#)) which removes undesired attributes via the negative prompt.

The input images for that embedding were **synthetic**—images generated by stable diffusion from prompts made to evoke characteristics the community members felt were undesirable in the human figure.

There are now hundreds of community embeds for this purpose alone and many thousands of others including those based on purloined [art styles](#) and non-consensual images of humans.

Prompt: a hand holding an image of a hand



Community Bias

As is the case with any AI generation tools open to the public, community members are another tier of teachers, training these models how to see, understand, and create.

If the community desires more “beautiful” outputs, then the ensemble of models available to the world will adjust accordingly.

Who are these communities teaching machines aesthetics? Are they representative of the complexity and diversity of the human population?

What standards of beauty are being learned?
What stereotypes about race, gender, and disability are being perpetuated?
What sources of inspiration might be lost in search of teaching machines to seek “normal?”

Prompt: disfigured hands

Negative prompt: beautiful hands





**Now, we have an idea about how
machines were taught by humans.**

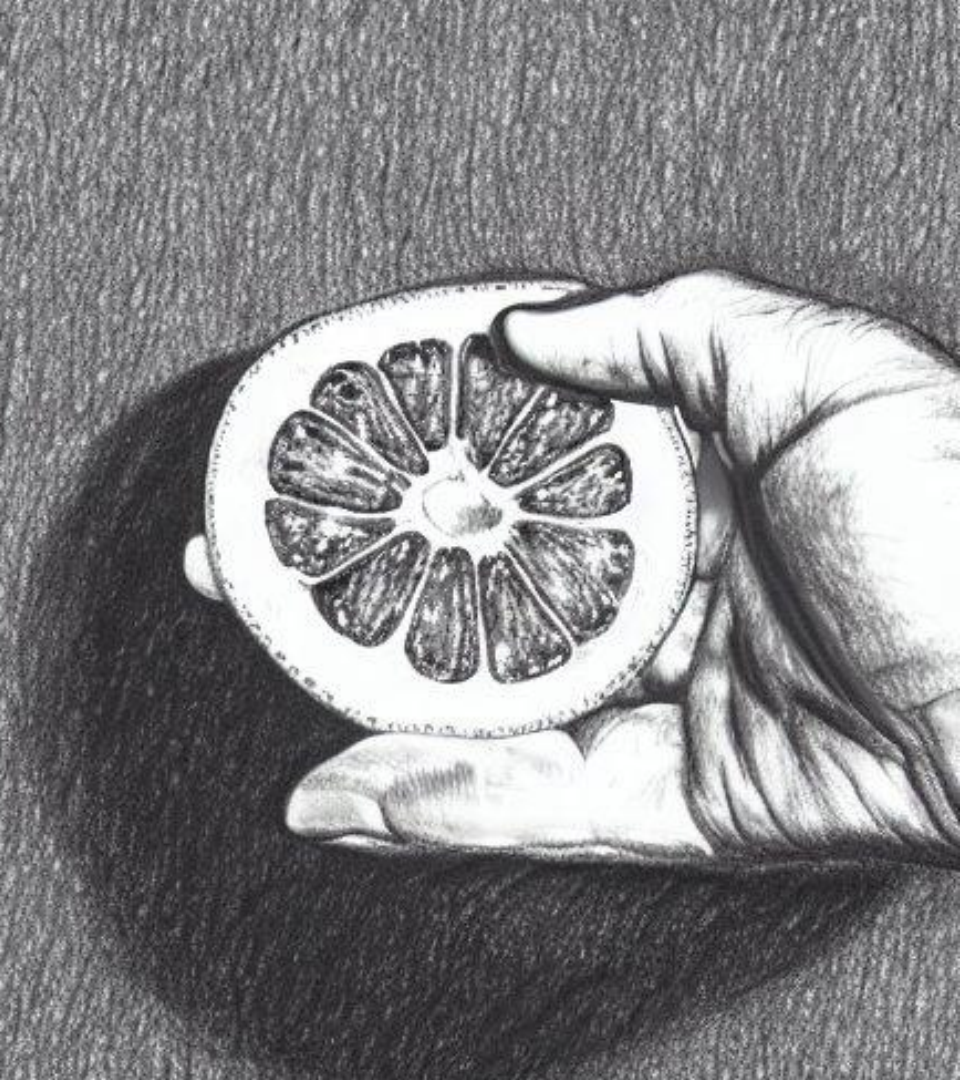


**But what might machines have to teach
us about the idea of being human?**



STEP 3:

Learn to draw a hand from a machine



Drawing a Hand:

A Grapefruit-Inspired Journey

Written by ChatGPT

prompt: draw a hand holding a grapefruit

Drawing a Hand:

A Grapefruit-Inspired Journey (2)

Written by ChatGPT

This set of instructions was generated by ChatGPT.

The only input supplied by humans was in the form of the prompts written by the authors and the text-based data from *Grapefruit* that was scraped (non-consensually) from the internet.

The text generated by the first prompt was then rewritten using the second prompt.

Prompt 1: How do you draw a hand?

Prompt 2: Rewrite these steps in the style of Grapefruit by Yoko Ono.



Drawing a Hand:

A Grapefruit-Inspired Journey (3)

Written by ChatGPT

Materials Needed:

1. Blank paper
2. Pencil or pen
3. Eraser (optional)

A detailed pencil drawing of a hand holding a slice of grapefruit. The hand is rendered with fine lines and shading, showing the texture of the skin and the veins of the palm. The grapefruit slice is held between the thumb and index finger, with the other fingers curled. The background is a simple, textured grey.

Drawing a Hand:

A Grapefruit-Inspired Journey (4)

Written by ChatGPT

Imagine a blank sheet of paper as a gateway to a realm where hands are not confined by ordinary boundaries.

Close your eyes and feel the pulse of creative energy within you. Breathe in the essence of possibilities waiting to be unleashed.



Drawing a Hand:

A Grapefruit-Inspired Journey (5)

Written by ChatGPT

Let your hand, guided by intuition, make its first mark upon the paper. Surrender to the moment as lines dance upon the page, embodying the spirit of a hand.

Open your eyes and witness the birth of a singular line, a tender thread connecting your imagination to the physical realm.



Drawing a Hand:

A Grapefruit-Inspired Journey (6)

Written by ChatGPT

Embrace the ever-expanding potential of your artwork. Allow lines to intertwine and grow, echoing the complexity and beauty of the hand's form.

Engage in a dialogue with the hand you are conjuring. Explore its curves, creases, and subtle nuances, giving it life and personality.



Drawing a Hand:

A Grapefruit-Inspired Journey (7)

Written by ChatGPT

Venture beyond the realm of the familiar. Challenge traditional perspectives and invite distortions to weave a narrative unique to your creation.

Feel the rhythm of your hand as it navigates the contours of the paper. Notice the whispers of expression, the harmonies of shadow and light that emerge organically.



Drawing a Hand:

A Grapefruit-Inspired Journey (8)

Written by ChatGPT

Inscribe the hand's stories upon the surface, etching the history of touch, labor, and grace.

Embrace the imperfections as they whisper truths only seen through an artist's eyes.

Reflect upon the culmination of your artistic journey. Contemplate the interplay of lines and shapes, the dance of shadows, and the embodiment of the hand's essence on the paper before you.


A detailed pencil drawing of a hand holding a slice of grapefruit. The hand is rendered with fine lines and shading, showing the texture of the skin and the grip. The grapefruit slice is held between the thumb and index finger, with the other fingers supporting it from below. The segments of the grapefruit are clearly defined with cross-hatching and fine lines.

Drawing a Hand:

A Grapefruit-Inspired Journey (9)

Written by ChatGPT

Remember, these steps are merely signposts along a vast and boundless path. Embrace the spontaneity and fluidity of creation, allowing your hand to lead you into uncharted territories of artistic expression. In the spirit of Grapefruit, let your hand-drawn masterpiece inspire connections, conversations, and awaken the dormant artistry in others.



**Gaze upon your
hand-drawn hand.**



Is it a “good” hand or a
“bad” hand?



**Where does this idea of
“bad hands come from?”**



**Hold onto to these
thoughts.**



STEP 4:

Learn to draw a hand with a machine



Drawing a Hand Again: *A Grapefruit-Inspired Remix*

Written by Humans

prompt: a hand becoming a grapefruit



Drawing a Hand Again:

A Grapefruit-Inspired Remix(2)

Written by Humans

This set of instructions was written solely by the authors.

We have done our best to both honor and channel the spirit of Ono's *Grapefruit* in developing these instructions.

A rough draft was generated from the first prompt and then revised based on the second prompt.

Prompt 1: How can we teach about Generative AI by exploring “bad hands?”

Prompt 2: Rewrite these steps in the style of *Grapefruit* by Yoko Ono.



Drawing a Hand Again:

A Grapefruit-Inspired Remix(3)

Written by Humans

Materials Needed:

1. A computer
2. Internet connection
3. Patience (optional)



Drawing a Hand Again:

A Grapefruit-Inspired Remix(4)

Written by Humans

Imagine you have never seen a hand.
They wave goodbye as they fade from
your memory.

Close your eyes and forget every
object you've ever held, every
gesture you've ever made, and every
person's hand you've ever grasped.



Drawing a Hand Again:

A Grapefruit-Inspired Remix(5)

Written by Humans

Invite the machine to draw a hand.

Be curious about the images it
conjures.

Recall the first time you ever drew
a hand. Search for empathy in its
mechanical failures. Find wonder in
its fantastical misdirections.



Drawing a Hand Again:

A Grapefruit-Inspired Remix(6)

Written by Humans

Select one image that calls to you. Commune with its contours. What stories do these hands hold?

Slide the guidance scale until the image begins to haunt you. Listen carefully as the disappearing trace of the human touch whispers a ghost story.



Drawing a Hand Again:

A Grapefruit-Inspired Remix(7)

Written by Humans

Conspire with the machine to exorcise the “bad hands” that haunt you. Banish them using the negative prompt.

Reflect on the real hands that might be considered “bad” by the machine (and by humans). Who disappears when we erase them from our machines (and our minds)?



Drawing a Hand Again:

A Grapefruit-Inspired Remix(8)

Written by Humans

Converse with the machine to
create hands of many kinds
together.

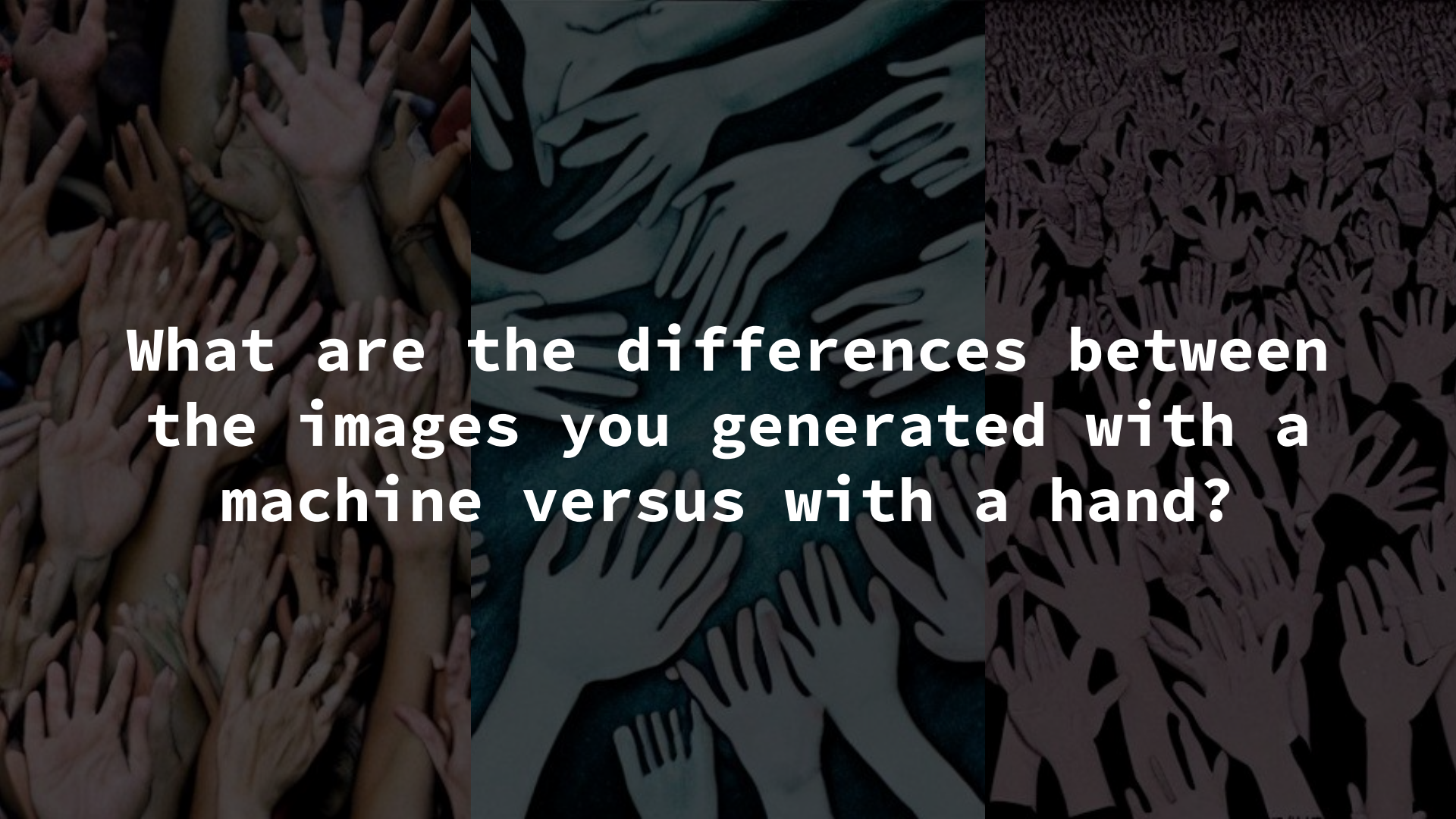
Reflect on what catches your
attention and how the feeling sits
in your chest. Be it curiosity,
confusion, disgust, or awe - hold
these expressions for a moment.



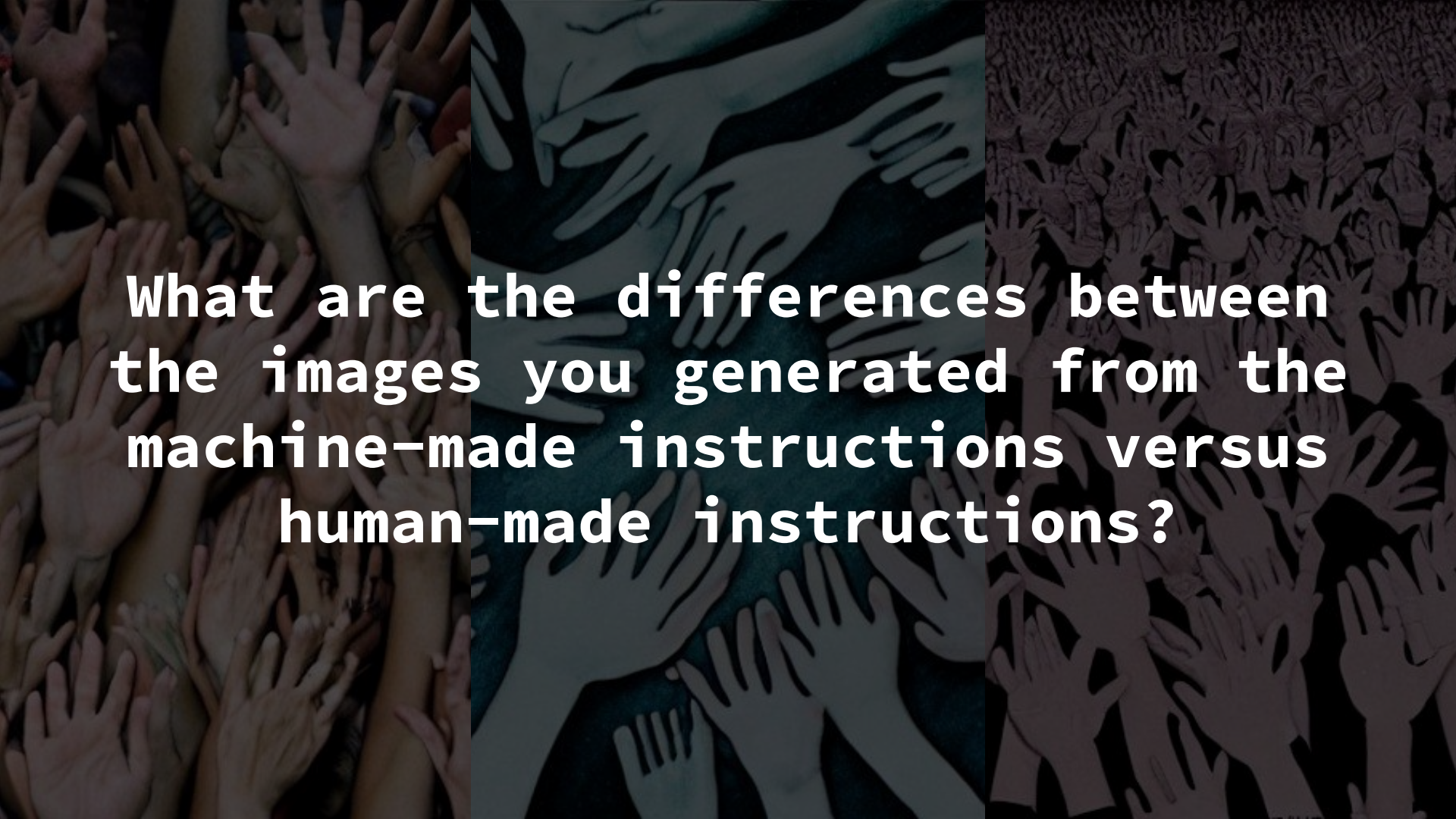
Drawing a Hand Again: *A Grapefruit-Inspired Remix(9)*

Written Revised by Humans

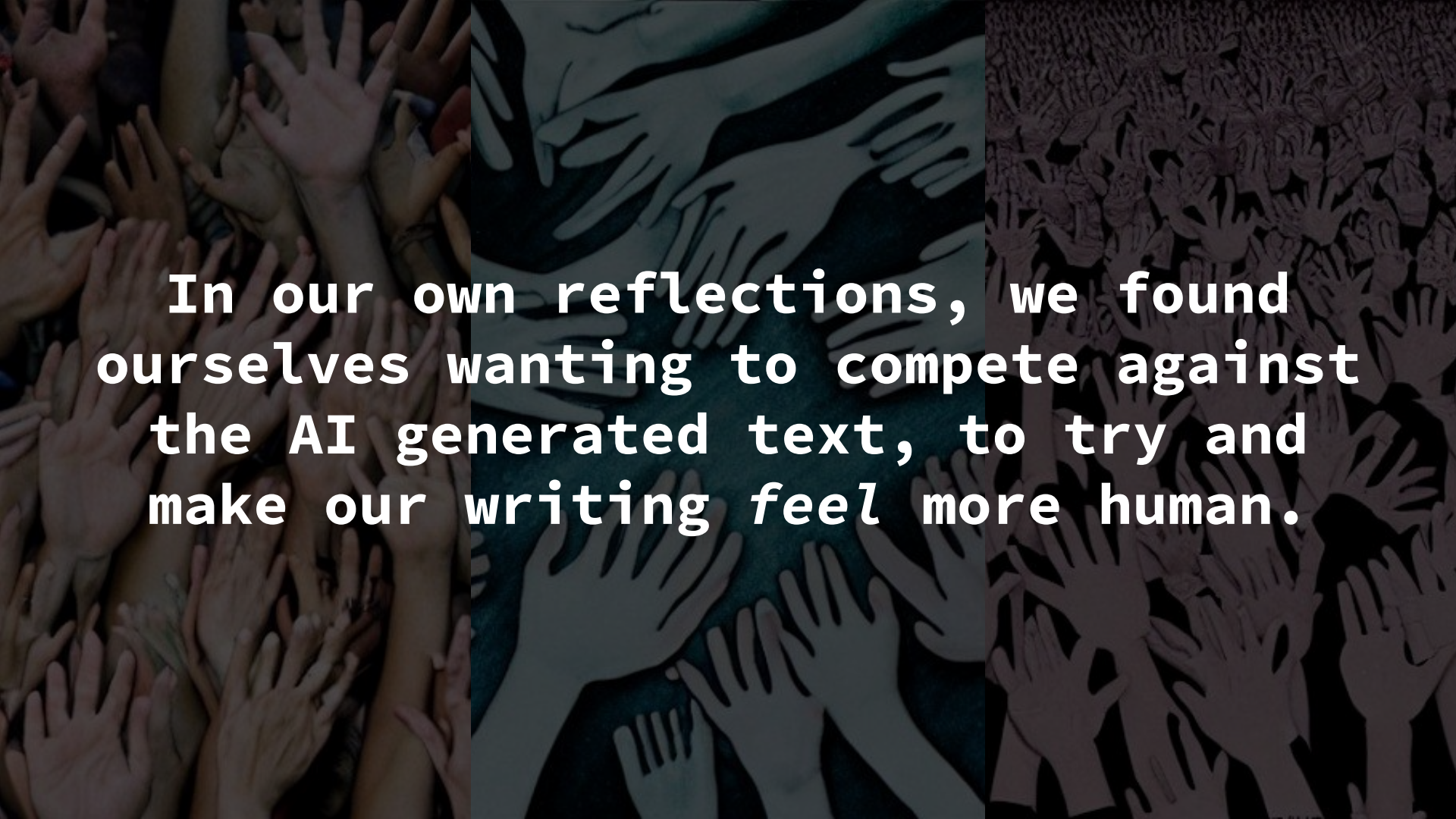
Remember, these steps are merely signposts along a vast and boundless path. Embrace the spontaneity and fluidity of creation, allowing your *machine* to lead you into uncharted territories of artistic expression. In the spirit of Grapefruit, let your *machine*-drawn masterpiece inspire connections, conversations, and awaken the dormant artistry in others.



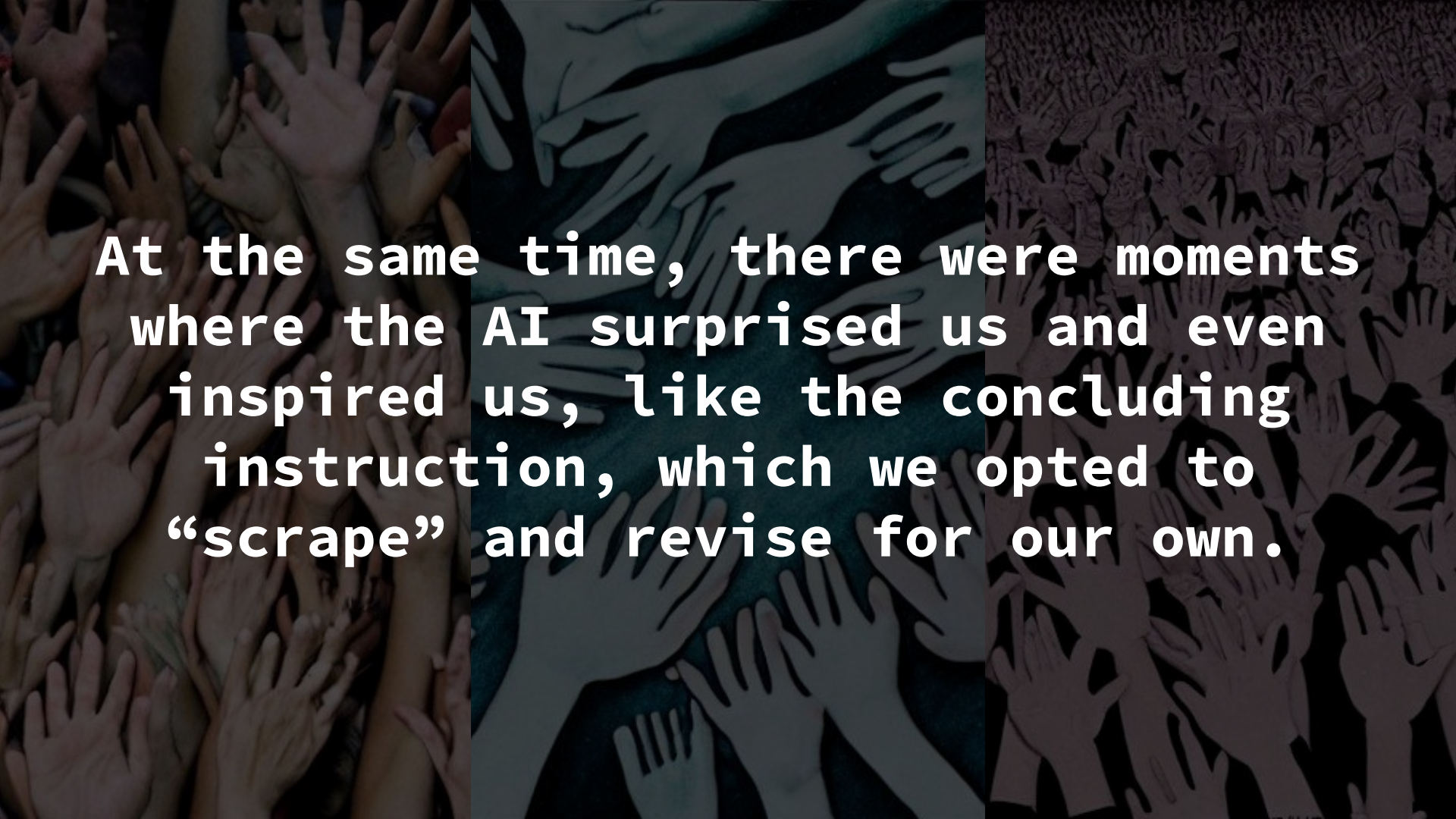
What are the differences between the images you generated with a machine versus with a hand?



What are the differences between the images you generated from the machine-made instructions versus human-made instructions?



In our own reflections, we found ourselves wanting to compete against the AI generated text, to try and make our writing *feel* more human.



At the same time, there were moments where the AI surprised us and even inspired us, like the concluding instruction, which we opted to “scrape” and revise for our own.



Which brings us to our
final section.



STEP 5:

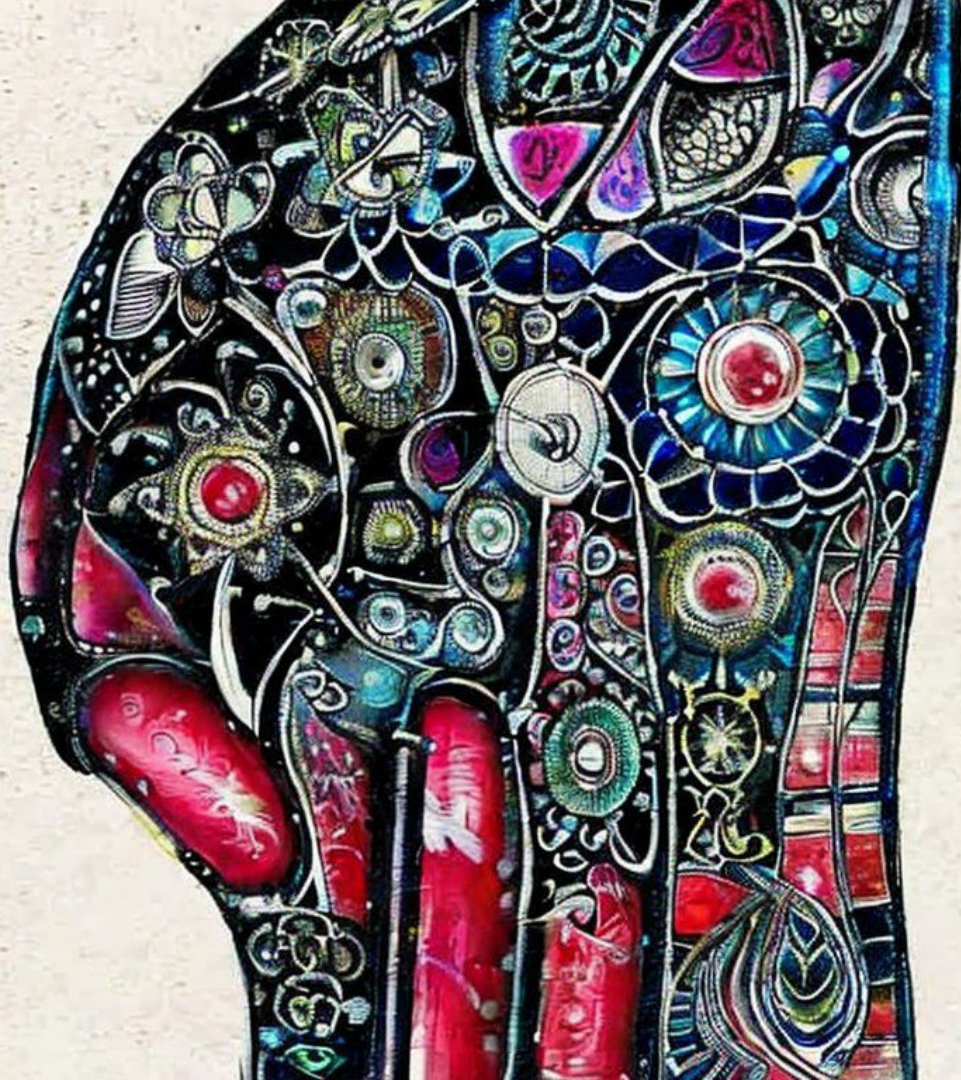
**Reflect on how humans and machines
learn to draw hands together.**

“Where we start to move forward is when we learn to ask questions which are less concerned with ‘Are you like us?’, and more interested in ‘What is it like to be you?’”

James Bridle, *Ways of Being: Animals, Plants, Machines: The Search for a Planetary Intelligence*

Prompt: what a machine believes to be a beautiful hand

Negative prompt: human hand



Final Thoughts(1)

It's tempting to want to categorize generative AI as either a "good" or "bad" tool, the same way we might want to classify "good" or "bad" hands. But of course these lines are blurry, fuzzy, and most definitely messy.

The artist, James Bridle, invites us to imagine how knowledge is constructed outside of ourselves and encourages us to acknowledge that there are simply some things about the universe that we may never know, including our own creations like artificial intelligence.

The black box of these new AI tools, certainly represents one of these boundaries of the unknown. And it makes one wonder, are there things about the nature of ourselves that we could learn from the nature of these machines?

Prompt: a hand of a hand



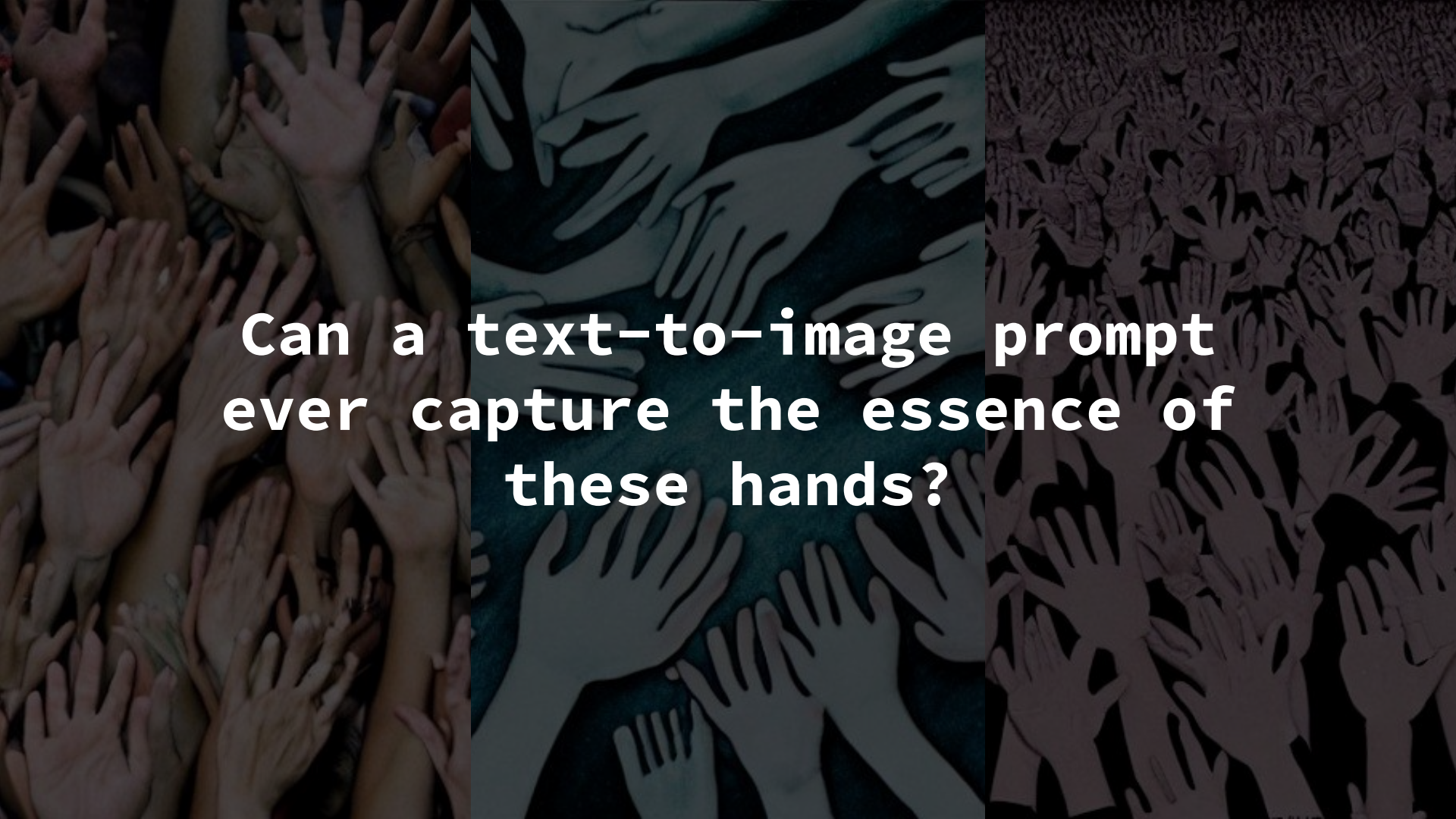


As a thought experiment, what images do you generate in your mind when you read the following quote?

Mine are the hands of your bad dreams.
Booga booga from behind the black curtain.
Claw hands.
The ivory girl's hands after a decade of roughing it.
Crinkled, puckered, sweaty, scarred,
a young woman's dwarf knobby hands
that ache for moonlight— that tremble, that struggle
Hands that make your eyes tear.
My hands. My hands. My hands
that could grace your brow, your thigh
My hands! Yeah!

- Cheryl Marie Wade, *Vital Signs* (1995)

as quoted in *Concerto for the Left Hand: Disability and the Defamiliar Body* by Michael Davidson
who was referencing “*Dares to Stares: Disabled Women Performance Artists*
& *The Dynamics of Staring*” by Rosemarie Garland Thomson



**Can a text-to-image prompt
ever capture the essence of
these hands?**



**Could your own mind generate
the essence of these hands?**

Final Thoughts(2)

As artists, it's understandable that many of us feel apprehensive, even antagonistic, towards these new generative AI tools.

Beyond the existential threat of our livelihoods and labor, there's a deeper philosophical, perhaps even spiritual, concern about the connection between art and what it means to be human.

But do our tools not also reflect us? To quote Father John Culkin's *A schoolman's guide to Marshall McLuhan*, "We become what we behold. We shape our tools and then our tools shape us."³

a human right hand making a fist. The back of the hand is visible with protruding knuckles. The fingers are curled towards the palm, hiding the fingertips. Thumb is wrapped over the other fingers, with its end near the base of the index finger. The skin texture is natural and realistic with visible creases and folds. Steps: 35, Sampler: Euler a, CFG scale: 2.5, Seed: 671884549, Size: 512x512, Model hash: 4c86efd062, Model: SDv1.5, Version: v1.3.1 (from [ChatGPT prompt](#))



Final Thoughts(3)

Maybe there is an important lesson for us to learn from these machines: perhaps it is our assumptions about what looks “human” that needs to be challenged, not theirs.

Are there not real humans who have more or less than five fingers? Whose joints might meet at different points? Whose hands might look different from those in a drawing textbook?

What are we saying about those human hands when we call these generated images “bad hands?” And what will be lost when we eventually banish them from the black box of these generators in favor of “good hands?”

An image of a human hand in a 'peace' or 'victory' sign. Two fingers, the index and middle, are extended upward, forming a V shape. The remaining fingers, ring and pinky, are bent towards the palm. The thumb lies across the bent fingers. The back of the hand is visible, displaying natural skin texture and creases. Steps: 35, Sampler: Euler a, CFG scale: 2.5, Seed: 671884549, Size: 512x512, Model hash: 4c86efd062, Model: SDv1.5, Version: v1.3.1



Final Thoughts(4)

These “bad hands” are ephemeral and will most likely only be with us for a short time.

Therefore, we encourage you to take some time to explore their shapes and forms. Study them as you would any hands.

What ways do they teach us?

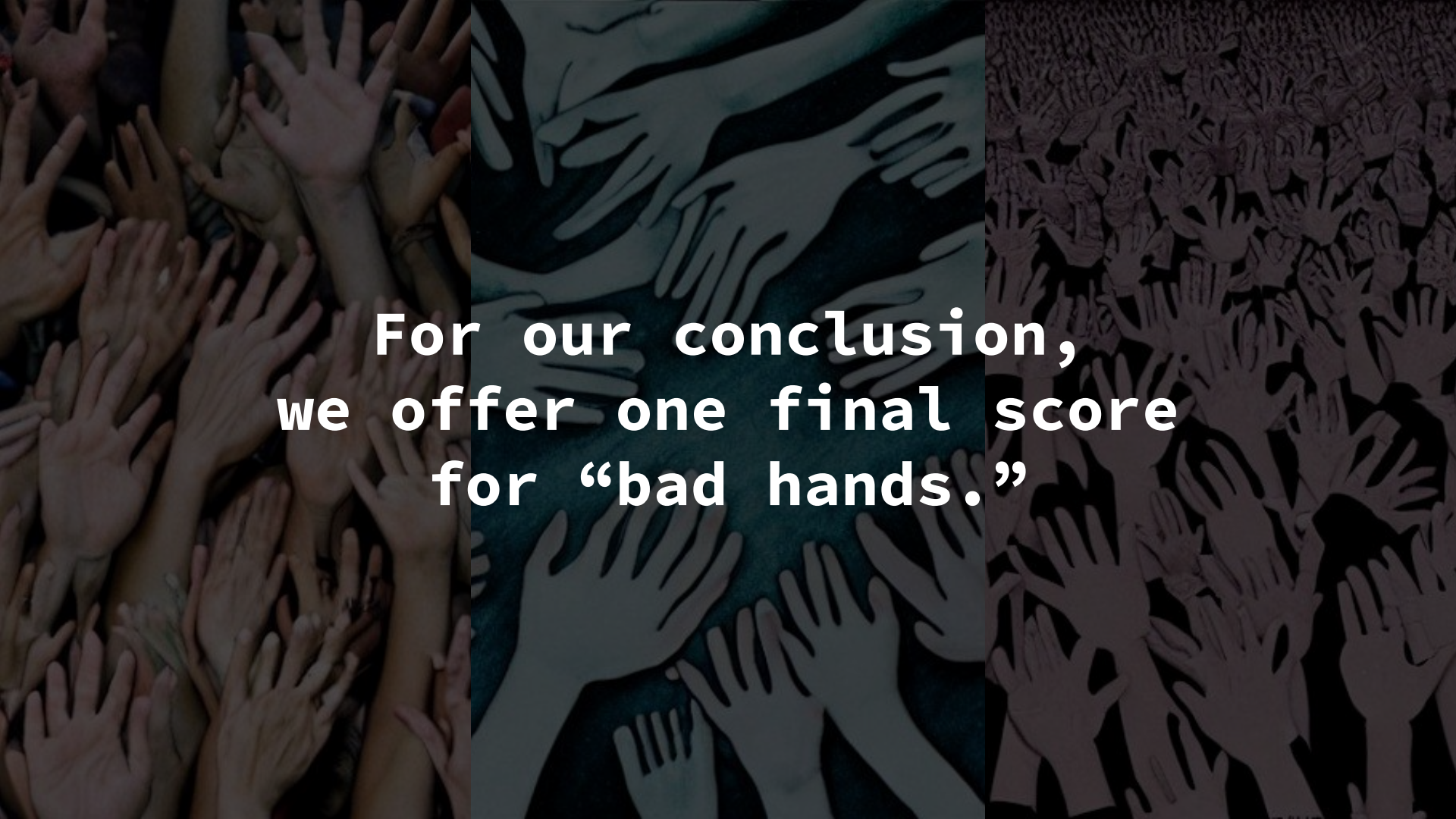
What thoughts do they provoke?

What stories to they tell?

What feelings do they evoke?

a prehensile, multi-fingered appendage
Steps: 35, Sampler: Euler a, CFG scale: 5.5,
Seed: 671884549, Size: 512x512, Model hash:
4c86efd062, Model: SDv1.5, Version: v1.3.1





For our conclusion,
we offer one final score
for “bad hands.”



**Instructions for Embracing the
Quirky Charm of "Bad Hands"**
A Grapefruit-Inspired Score

A duet for human and machine

Co-written by ChatGPT & Humans

prompt: grapefruit hands growing on a tree

Instructions for Embracing the Quirky Charm of "Bad Hands"

A Grapefruit-Inspired Score(2)

A duet for human and machine

Co-written by ChatGPT & Humans

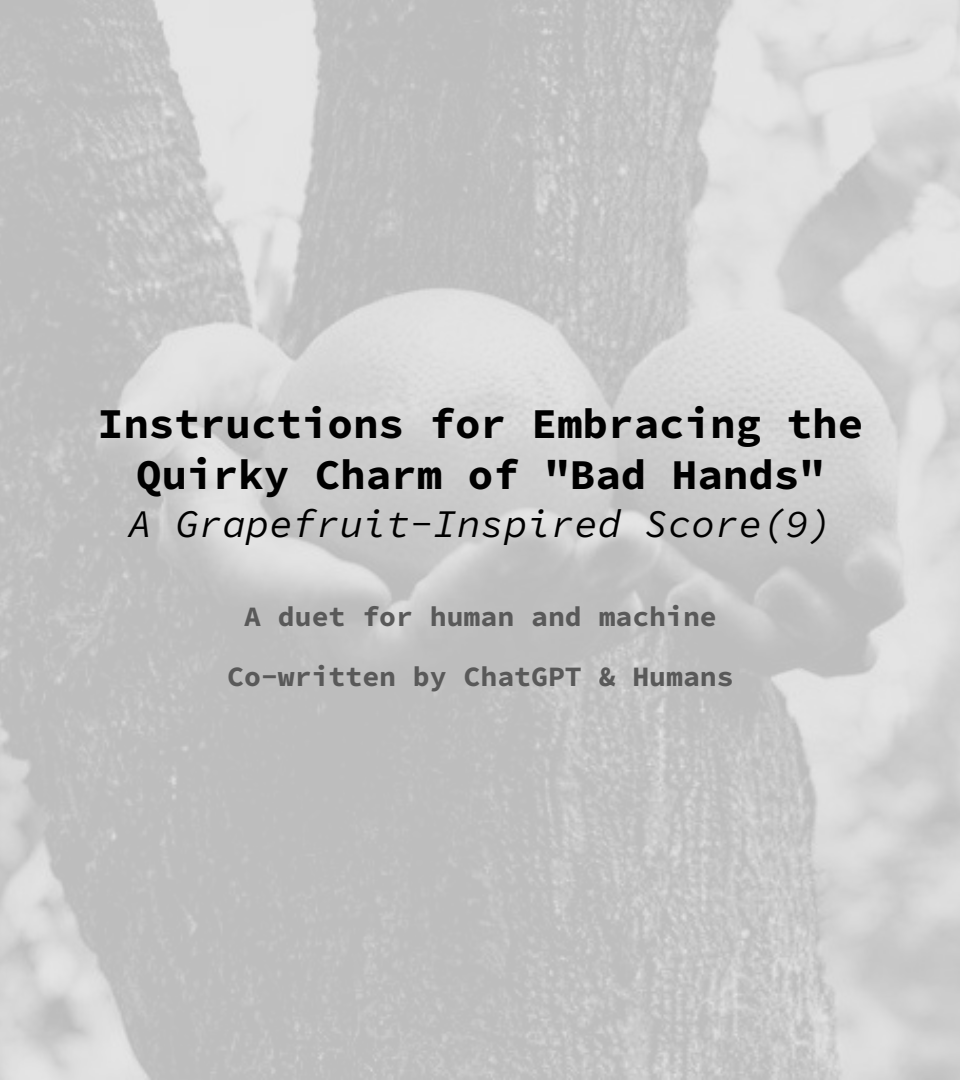
This set of instructions was written as a collaboration between the authors and ChatGPT.

A first pass of text was generated from the initial prompt and then re-written based on the second prompt.

The authors then curated, modified, and on occasion rewrote text based on flow and desired direction for the score.

Prompt 1: Teach me how to draw "bad hands."

Prompt 2: Rewrite this as an instructional piece in the style of Grapefruit by Yoko Ono.

A grayscale photograph of a hand holding several grapefruits against a tree trunk. The hand is positioned in the center, with the grapefruits resting in its palm. The background shows the rough bark of a tree trunk and some blurred foliage.

Instructions for Embracing the Quirky Charm of "Bad Hands"

A Grapefruit-Inspired Score(3)

A duet for human and machine

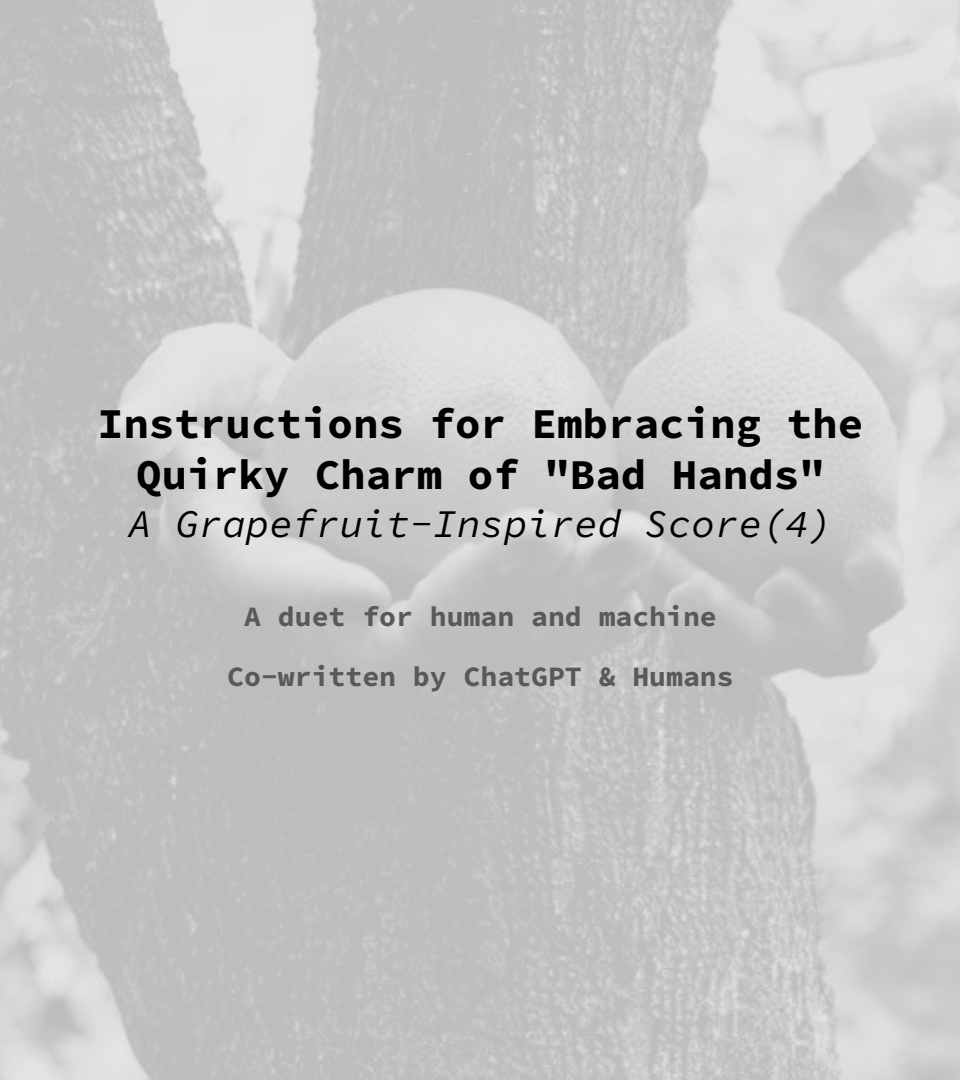
Co-written by ChatGPT & Humans

Release the confines of perfection and welcome the beauty in imperfection.

Allow "bad hands" to emerge, quirky and unique in their own unconventional way.

Begin by sketching generating organic shapes for palms and fingers.

Let them meander, twist, and turn, embracing the whimsical rhythm of play.

A grayscale photograph of a person's hands holding several grapefruits against a tree trunk. The hands are positioned in the center, with the grapefruits resting in the palms. The background shows the rough bark of a tree trunk and some blurred foliage.

Instructions for Embracing the Quirky Charm of "Bad Hands"

A Grapefruit-Inspired Score(4)

A duet for human and machine

Co-written by ChatGPT & Humans

Release the confines of perfection and welcome the beauty in imperfection.

Allow "bad hands" to emerge, quirky and unique in their own unconventional way.

Begin by ~~sketching~~ generating organic shapes for palms and fingers.

Let them meander, twist, and turn, embracing the whimsical rhythm of play.

A grayscale photograph of a hand holding several grapefruits against a tree trunk. The hand is positioned in the center, with fingers slightly curled around the fruit. The grapefruits are clustered together, and the tree trunk is visible in the background, providing a natural, textured backdrop.

Instructions for Embracing the Quirky Charm of "Bad Hands"

A Grapefruit-Inspired Score(5)

A duet for human and machine

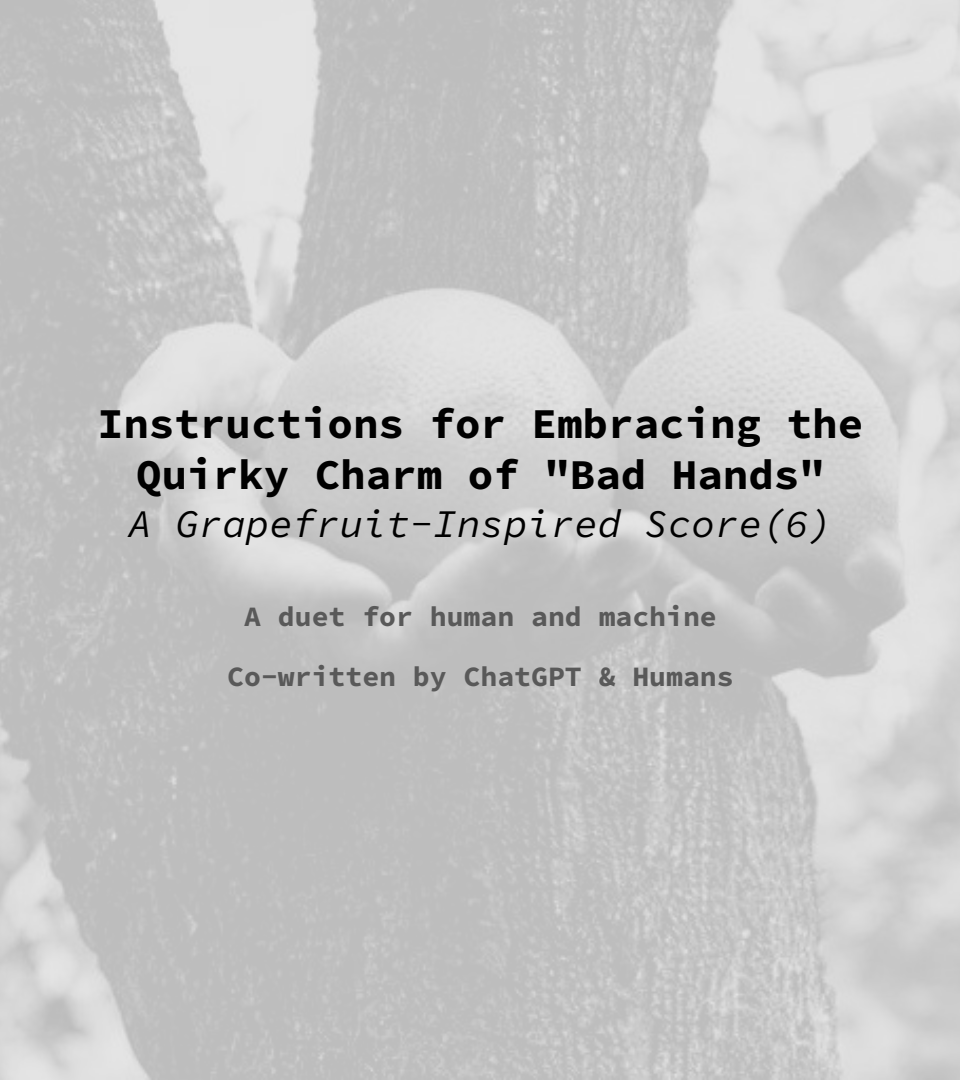
Co-written by ChatGPT & Humans

Embrace playful finger lengths,
irregular and wonderfully askew.

Let them dance, intertwine, or jut
out with joyful disregard for
conventional rules.

Delight in unexpected angles and
bends, capturing the essence of
surprise.

Celebrate each finger's
independent spirit, its whimsical
curve and twist.

A grayscale photograph of a person's hands holding several grapefruits against a tree trunk. The hands are positioned in the center, with the grapefruits resting in the palms. The background shows the rough bark of a tree trunk and some blurred foliage.

Instructions for Embracing the Quirky Charm of "Bad Hands"

A Grapefruit-Inspired Score(6)

A duet for human and machine

Co-written by ChatGPT & Humans

Trace Generate wobbly lines, as if guided by a playful breeze.

Embrace the imperfect grace, adding knobbly knuckles and whimsical wrinkles.

Revel in the beauty of flaws and quirks, each one a story to be told.

Adorn "bad hands" with delightful imperfections, bumps, and whimsical textures.



**Instructions for Embracing the
Quirky Charm of "Bad Hands"**

A Grapefruit-Inspired Score(7)

A duet for human and machine

Co-written by ChatGPT & Humans

Explore expressive gestures that transcend the ordinary.

Unleash movements that dance between the comical and the dramatic.

Splash colors with exuberance, for "bad hands" know no bounds.

Paint them with vibrant hues, unapologetically bold and wonderfully unconventional.



Instructions for Embracing the Quirky Charm of "Bad Hands"

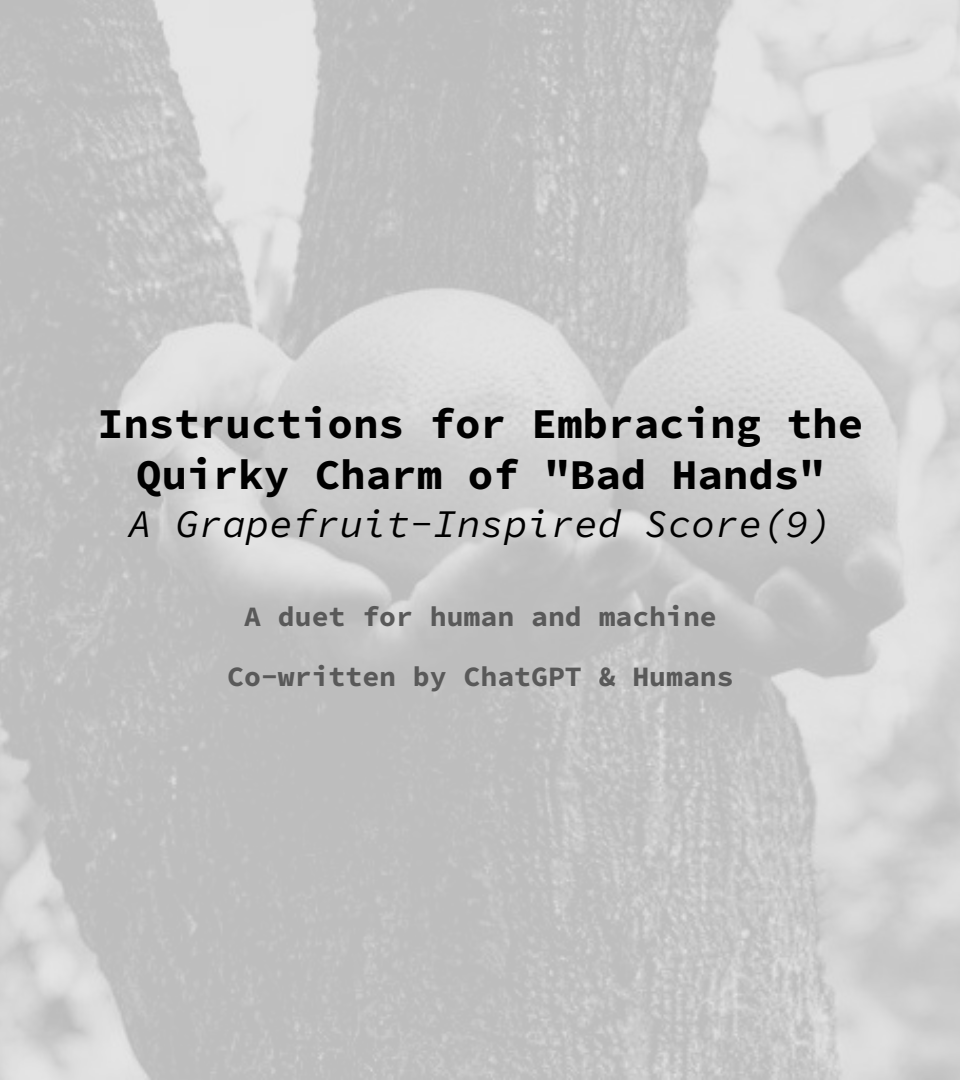
A Grapefruit-Inspired Score(8)

A duet for human and machine

Co-written by ChatGPT & Humans

Remember, the aim is to embrace
the charm of imperfection.

With each ~~stroke~~ creation, smile
and rejoice in the joyous spirit
of "bad hands."



**Instructions for Embracing the
Quirky Charm of "Bad Hands"**

A Grapefruit-Inspired Score(9)

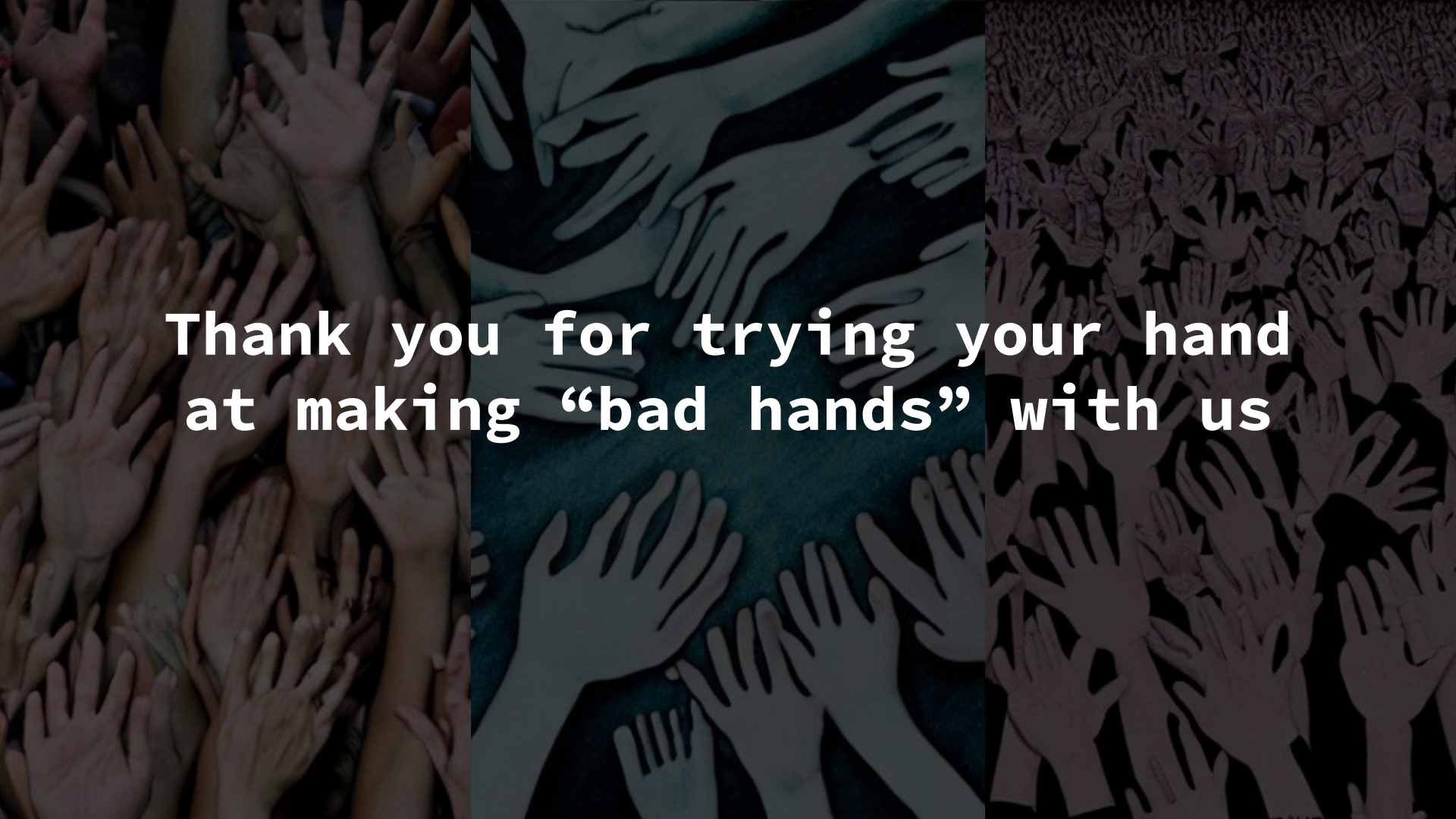
A duet for human and machine

Co-written by ChatGPT & Humans

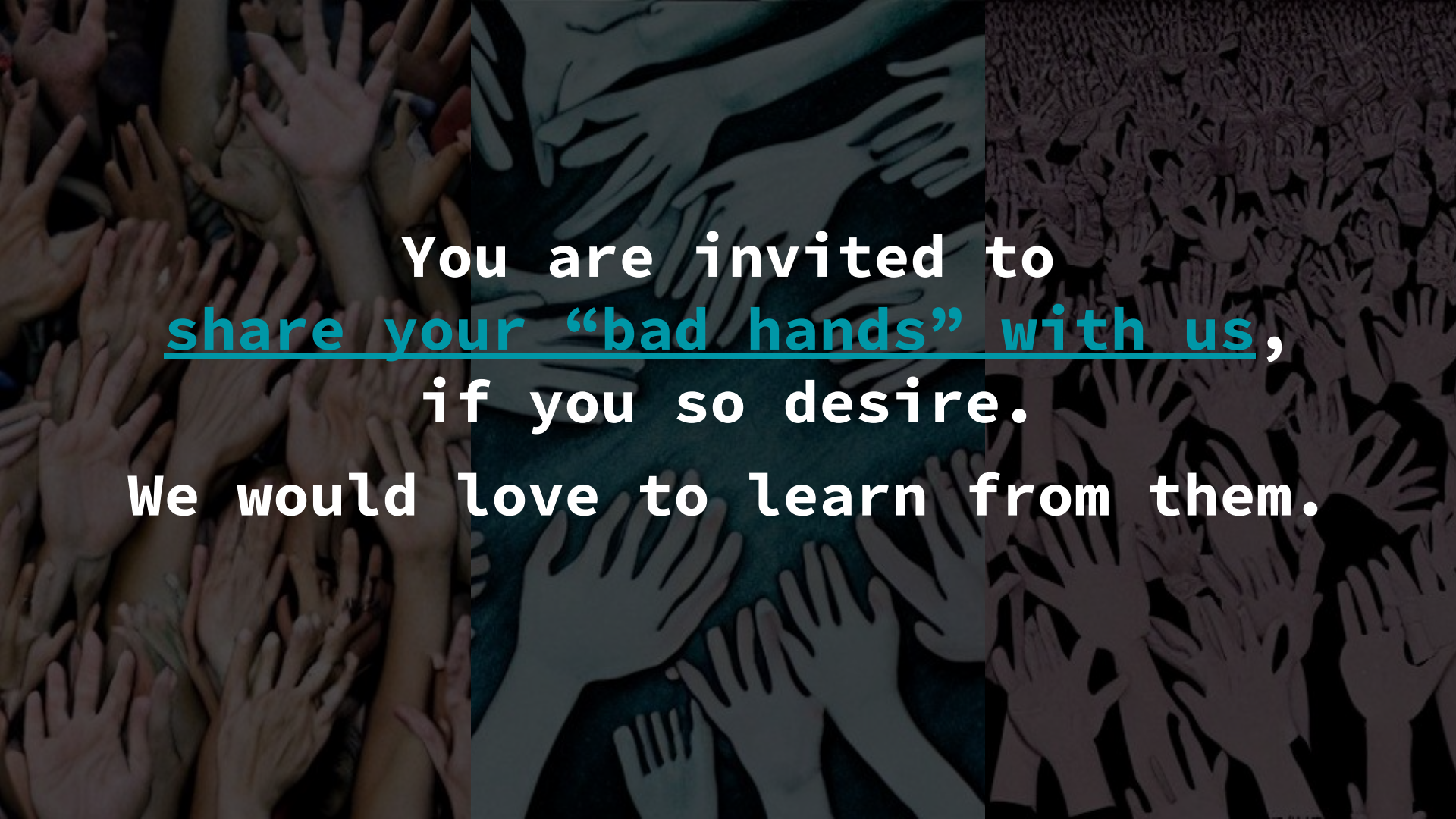
Allow your creativity to soar as
you dive into the world of "bad
hands."

Let the whimsy guide your hand,
and with each stroke, celebrate
the unique and imperfect beauty
that emerges.

In this playful exploration, the
magic lies in the imperfections,
as "bad hands" become a testament
to the joy of embracing delightful
idiosyncrasies.



**Thank you for trying your hand
at making “bad hands” with us**



You are invited to
share your “bad hands” with us,
if you so desire.

We would love to learn from them.



Notes and References

Footnotes

You can click the footnote number to return to the slide.

¹ The authors would like to note that Stable Diffusion updated from the time of submission to the time of revision, and will most likely be using a new version by the time of publication.

² For a deeper dive and discussion about the topic of figures, we recommend Hyland's lecture and Stable Diffusion demo, entitled [Generative AI Glitch Art: Looking for meaning in all the wrong places.](#)

³ This [quote is often misattributed to Marshall McLuhan,](#) but was actually an explanation of McLuhan's ideas intended for primary and secondary education.

Main References

- 👉 deepfates's [The Mirror of Language](#) ([archive](#))
- 👉 Yoko Ono's *Grapefruit* (1964)
- 👉 Nick Briz's [Thoughts On Glitch\[Art\]v2.0](#)
- 👉 Bruce Sterling's [lecture on the Art of Text-to-Image Generative AI](#) ([archive](#))
- 👉 Hugo B. Froehlich and Bonnie E. Snow's *Text Books of Art Education*, Book IV (of 7) (1904)
- 👉 James Bridle's *Ways of Being: Animals, Plants, Machines: The Search for a Planetary Intelligence* (2022)
- 👉 Michael Davidson's *Concerto for the Left Hand: Disability and the Defamiliar Body* (2008)



Additional Links (in order of appearance)

- 👉 [AI art tools Stable Diffusion and Midjourney targeted with copyright lawsuit - The Verge \(archive\)](#)
- 👉 [OpenAI Used Kenyan Workers on Less Than \\$2 Per Hour: Exclusive | Time \(archive\)](#)
- 👉 [GenAI: Giga\\$\\$\\$\\$, TeraWatt-Hours, and GigaTons of CO2 \(archive\)](#)
- 👉 [Black Artists Say A.I. Shows Bias, With Algorithms Erasing Their History - The New York Times \(archive\)](#)
- 👉 [Generative AI Tools Are Perpetuating Harmful Gender Stereotypes - CIGI \(archive\)](#)
- 👉 [Ageism, sexism, classism and more: 7 examples of bias in AI-generated images \(archive\)](#)
- 👉 [The Joy and Dread of AI Image Generators Without Limits | WIRED \(archive\)](#)
- 👉 [Artist finds private medical record photos in popular AI training data set | Ars Technica \(archive\)](#)
- 👉 [AI can draw hands now. That's bad news for deep-fakes. \(archive\)](#)
- 👉 [The Uncanny Failure of A.I.-Generated Hands | The New Yorker \(archive\)](#)
- 👉 [Studio Denies Laying Off Artists For AI After Fans Spot Character With Six Fingers \(archive\)](#)
- 👉 [An Image is Worth One Word: Personalizing Text-to-Image Generation using Textual Inversion](#)
- 👉 [ChatGPT and generative AI are booming, but the costs can be extraordinary \(archive\)](#)
- 👉 [Actionable Auditing: Investigating the Impact of Publicly Naming Biased Performance Results of Commercial AI Products - MIT Media Lab](#)
- 👉 [BLIP: Bootstrapping Language-Image Pre-training for Unified Vision-Language Understanding and Generation](#)
- 👉 [DIAL: Deep Interactive and Active Learning for Semantic Segmentation in Remote Sensing](#)
- 👉 [An Image is Worth One Word: Personalizing Text-to-Image Generation using Textual Inversion](#)
- 👉 [Nerfgun3/bad_prompt posts: \[Part 1\]\(#\), \[Part 2\]\(#\), \[Part 3\]\(#\)](#)
- 👉 [AI-generated art sparks furious backlash from Japan's anime community | Nieman Journalism Lab \(archive\)](#)