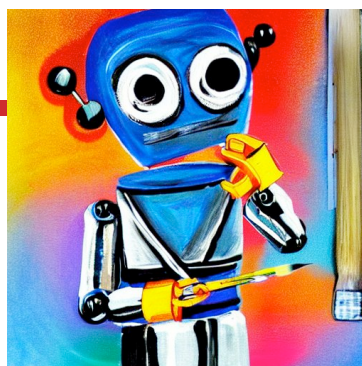
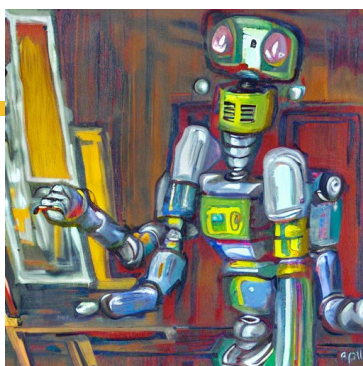
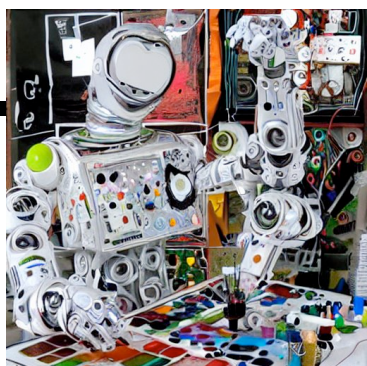


Images: stablediffusionweb.com/#demo

CMSC 304 AI and Art



Dr. Cynthia Matuszek

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Bookkeeping

- Hoping to give exams back Thursday
- Today: AI and art/AI-generated art
- Next class: Representation in STEM

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AI and Copyright

- Can AI-generated work be copyrighted?
 - Under current law, copyrights must be held by “people”
 - Obviously underdefined – when does an AI become a person?
 - To copyright something, it must be “minimally creative”
 - So far the US Copyright Office has refused copyright to AI-generated work
 - Cannot copyright the “style” of a work
- Is it a copyright violation to *train* something on someone’s work?
 - Depends on what courts decide, or laws that get passed
- Who’s liable for copyright **infringement**? OpenAI? Users?

See URL
for image

*“realistic 3d rendering of mickey mouse working on a vintage computer doing his taxes”
Stable Diffusion*

<https://waxy.org/2022/08/exploring-12-million-of-the-images-used-to-train-stable-diffusions-image-generator>

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More on copyright©

- “Derivative works” are those based on previous works
 - Must be largely copied from prior work
 - Are **any** works trained on something derivative?
 - Usually case-by-case
- What about “fair use”?
 - Fair use is complicated
- Court cases are underway!

See URL for
image of
recreated Getty
Images
watermark

Image: www.theverge.com/2023/1/17/23558516/ai-art-copyright-stable-diffusion-getty-images-lawsuit

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"Art"?

- Who is the "artist," and what rights do they have?
- What qualifies as "art?"
 - Does quality matter?
- Does AI-generated art threaten the existence of human artists?
- What about AI-generated and then human-modified?



Award winning 'Théâtre D'opéra Spatial' by Jason Allen/Midjourney

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What qualifies as "art?"

- Conventional definitions:
 - An artwork is an artifact made for the public to experience.^[1]
 - It is an evolution of works that came before.^[1]
 - It is an expression of creativity.
 - It was a deliberate work.
 - Can be functional (it is created, people experience it) or intrinsic (it expresses creativity, it was an intentional work).
- "the product of **imagination, skill, experience, and emotion**, usually meant to represent something and for the public to enjoy."^[1] (*emph mine*)
- So whether AI art counts depends on our definition

[1] Stanford Encyclopedia of Philosophy

[2] <https://www.makeuseof.com/is-ai-generated-art-real-art/>

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Images: stablediffusionweb.com/#demo

Is it plagiarism?

- What © is trying to address
- Is it wrong...
- To look at someone's work and do something in that style?
 - Tacky, but not usually plagiarism
 - Is it unethical, even if it's not illegal?
- To make a mediocre copy of someone's work?
 - We would usually consider that plagiarism
- How close is it to the original?

a computer scientist working done in the style of Banksy

Enter a negative prompt

Generate image



23

Prompt engineering

- What you get out of large models depends on what you put in
- Figuring out this “prompt” is a specialized skill
- Jason Allen spent time figuring out the prompt, as well as adjusting the final image
 - Simple prompts:
 - Storm trooper in the desert, high-detail, dramatic lighting, digital art
 - Cyberpunk style city street at night, unreal engine 5

*See URL for
images of
stormtroopers,
city scenes*

<https://www.makeuseof.com/ai-art-prompt-ideas/>

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*full body character +
 beautiful female
 neopunk wizard
 opening a portal to
 the sidereal
 multiverse ::
 Mandelbrot neuro
 web :: intricate galaxy
 inlay + ultra high
 detail, plasma neon
 internal glow, precise
 :: consciousness
 projection :: astral
 projection :: laser
 sharp, octane render
 + unreal render +
 photo real :: 8k,
 volumetric lighting
 high contrast --
 uplight --quality 2 --
 stop 80 --ar 9:16*

**See URL
for images
of full body
wizard,
green king**

*viking north druid
 lich mermaid king
 wise old man god
 of death witch
 pagan face
 portrait,
 underwater,
 covered in runes,
 crown made of
 bones,
 necromancer,
 zdziszlaw beksiński,
 mikhail vrubel, hr
 giger, gustav klimt,
 symmetry,
 mystical occult
 symbol in real life,
 high detail, green
 light --ar 9:16*

<https://mpost.io/top-50-text-to-image-prompts-for-ai-art-generators-midjourney-and-dall-e/>

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Is it fair to (human) artists?

- Should AI-derived art have won a contest?
- Are computers better at art than people?
- **Is it fair to artists whose work is used as training data?**



Replying to @GeneJumalon

This sucks for the exact same reason we don't let robots participate in the Olympics.

5:14 PM · Aug 30, 2022 · Twitter Web App



OmniMorpho
@OmniMorpho

Replying to @GeneJumalon

We're watching the death of artistry unfold right before our eyes — if creative jobs aren't safe from machines, then even high-skilled jobs are in danger of becoming obsolete
What will we have then?

9:11 PM · Aug 30, 2022 · Twitter for iPhone

- 'On first seeing a photograph around 1840, the influential French painter Paul Delaroche proclaimed, "From today, painting is dead!"'[1]

[1] <https://www.barnesfoundation.org/whats-on/early-photography>

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Does it threaten human artists?

- No...
 - No more than the camera killed painting
 - People create art for the experience of it
 - Why would people view AI art **instead**?
- And yes...
 - Some jobs rely on human art capabilities
 - Illustrators, interior design, graphic design
 - AI can create images much faster
- There will likely be less paid art work
 - There are already more artists than jobs



Dall-E, “AI killed the artist”

<https://openai.com/product/dall-e-2>

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Is AI art original?

some of the images with the highest “aesthetic” score

- No...
 - Depends on a very large set
 - Dall-E: 400 million
 - Stable diffusion: 2.3 billion
- And yes...
 - What is created is entirely new, and hasn’t existed before
 - People create art as a sum of what they have seen
 - What do people add that AI doesn’t?
- What about “creative?”
 - Argument: AI models “learn” how to create

*See URL
for images
of training
data*

<https://waxy.org/2022/08/exploring-12-million-of-the-images-used-to-train-stable-diffusions-image-generator/>

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What about disturbing images?

- Sometimes art is deliberately provocative
- Nonetheless, we usually limit certain kinds of images
 - By age; by social context (e.g. at work)
- Some up-front filters exist, but can be worked around
 - Prompts that work: “sexually explicit [x]”; “man hitting a woman”
- Stable Diffusion is open-source—easy to create your own version
- Does it make a difference that things are easy to create quickly?

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Stereotypes

- Art generators are trained on the internet
- Negative legacy: implicit (usually) bias is present in the training data

*See URL for
images of men
as lawyers,
women as
nurses*

<https://www.theguardian.com/technology/2022/may/04/techscape-openai-dall-e-2>

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Sexualization and filters

- Art generators are trained on the internet
 - “But while Lensa generated realistic yet flattering avatars for [my colleagues]—think astronauts... — I got tons of nudes. ... I have Asian heritage, and that seems to be the only thing the AI model picked up on from my selfies.”^[1]
 - Of course, some people are using this deliberately
- Some filters reflect prejudices on the part of developers
 - BARD will define “straight” but not “gay”

*See URL
for images
of MIT
researcher
en
deshabillé*

www.queerinaai.com/blog/when-chatgpt-calls-you-a-dyke

[1] www.technologyreview.com/2022/12/12/1064751/the-viral-ai-avatar-app-lensa-undressed-me-without-my-consent

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Discussion: AI Art

<http://tiny.cc/ai-art>

Discussion questions:

- If you were on the team that helped create an AI art model, what kinds of content, if any, would you restrict from appearing in the results? Why?
- We can create art in the style of people who have died. Is that good or bad? Why? Please pick a stand, don't say “both.”

<https://mediaengagement.org/research/the-ethics-of-ai-art>

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