Western Norway
University of
Applied Sciences

AI-generated artwork

A brief overview

23 September 2022

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Hunter Ratliff

Postdoctoral researcher

Høgskulen på Vestlandet

Stable Diffusion – "Godzilla invading Bergen Norway dramatic lighting"

2022 Colorado State Fair fine arts competition Digital Arts/Digitally Manipulated Photography category winner
Théâtre D'opéra Spatial, generated by Jason M. Allen using Midjourney

NY Times | Ars Technica

What is this sorcery?

› Text-to-image

› Generative adversarial network (GAN)
  › generator vs. discriminator

› Generative Pre-trained Transformer (GPT) model
  › GPT-3 often used with $>10^9$ parameters
  › Trained on text-image pairs from the internet

› Convolutional neural networks (CNN)

› Neural style transfer (NST)

› And a bit of creativity with prompt engineering

PROMPTCRAFT

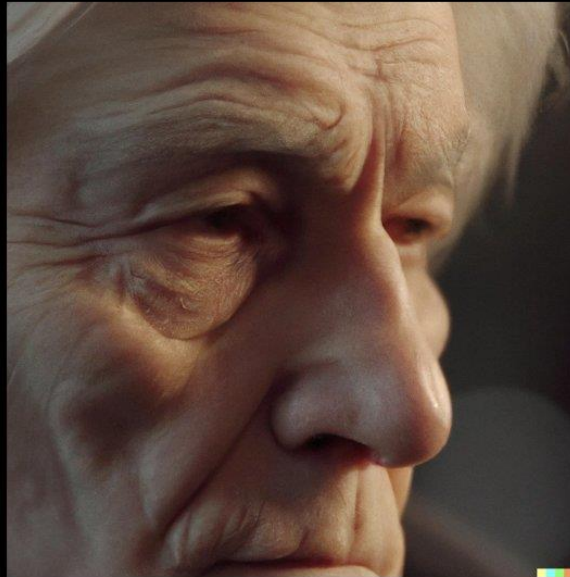DALL-E 2 – Llama playing basketball, generated by Joy Zhang
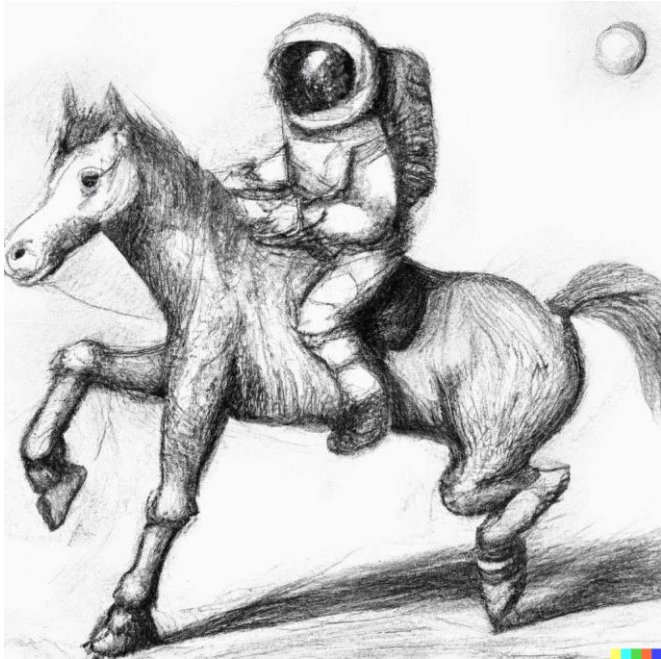
The big players

film still, portrait of an old man, wrinkles, dignified look, grey silver hair, peculiar nose, wise, eternal wisdom and beauty, incredible lighting and camera work, depth of field, bokeh, screenshot from a hollywood movie

DALL-E 2

› Perhaps the most advanced (for now)

› Developed by Open AI

› Very good at generating *artwork* (and images)

› Currently in closed beta (waitlist sign up)

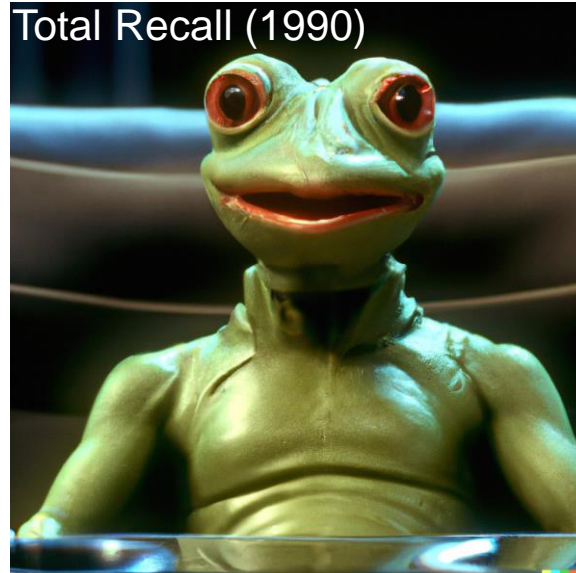An astronaut riding a horse as a pencil drawing
https://openai.com/dall-e-2/

Teddy bears shopping for groceries
in the style of ukiyo-e

A skateboarding meerkat, photograph from disposable camera

DALL-E 2: "A still of Kermit the Frog in – – –"

Blade Runner 2049 (2017)

Spirited Away (2001)

WALL-E (2008)

Family Guy (2008)

Star Wars (1977)

The Shining (1980)

Total Recall (1990)

Willy Wonka & The Chocolate Factory (1971)

DALL-E Outpainting

› New feature (31 Aug. 2022) – can be used to *extrapolate* more of an image

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MidJourney

› More focused on making "pretty" and artistic images

› *"we just want it to be easy to use – and we want the pictures to look good."*

› Beauty is easy, novelty and distinctness less so

› Interface via Discord bot or webpage

› Create 4 images at a time (default 256x256 px), pick your favorite, upscale it

› Currently slower than DALL-E 2

Panoramic landscape (by spacef)

Fish-eye lens (by Travnikov.dev)

Solarpunk tower (by Olivier)

https://www.midjourney.com/home/ | Quick Start Guide | Image sources

More examples from MidJourney…

airy, pin-up, sci-fi, steam punk, very deitaled, realistic, figurative painter, fineart, Oil painting on canvas, beautiful painting by Daniel F Gerhartz
Generated by jacques3d

Tiny cute and adorable piglet adventurer dressed in a warm overcoat with survival gear on a winters day, jean - baptiste monge , anthropomorphic
Generated by BartonDH

ethereal Bohemian Waxwing bird, Bombycilla garrulus
Generated by agapak

https://www.midjourney.com/showcase/ | https://www.deviantart.com/tag/midjourney

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Stable Diffusion

› Open Source

› **Rapid** advances in speed, quality, features

› Excels at *images* (art *and* photography)

› Used in browser (or on PC / Windows GUI)

› Now also has a Photoshop plugin (demo)

› Gallery with prompts: https://lexica.art/
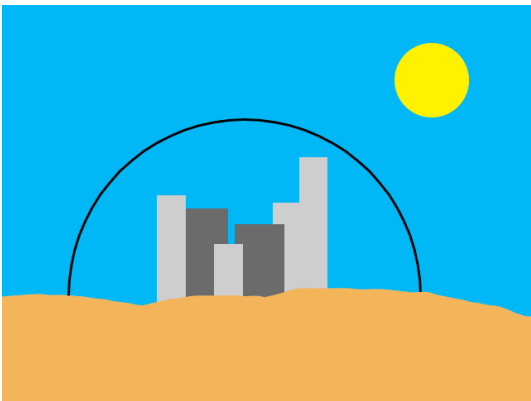
› img2img:

Jeflon Zuckergates by /u/rerri

Kanye West as Tyrion Lannister in Game of Thrones by /u/LeLastpak

A distant futuristic city full of tall buildings inside a huge transparent glass dome, In the middle of a barren desert full of large dunes, Sun rays, Artstation, Dark sky full of stars with a shiny sun, Massive scale, Fog, Highly detailed, Cinematic, Colorful

source reddit thread

Try Stable Diffusion!

Try img2img!

More examples from Stable Diffusion…

Jaba The Trump by /u/rservello

Jeremy Clarkson in GTA V by /u/Kaarssteun

gigachad luigi fighting like jason statham in a green suit with a beard, fantasy character portrait, ultra realistic, full body concept art, intricate details, highly detailed by greg rutkowski, ilya kuvshinov, gaston bussiere, craig mullins, simon bisley
LINK

ultra realistic illustration and highly detailed digital render of a intricate busy street inside a ancient 1 5 th century stone village, levitating high tech boats drive in the sky by greg rutkowski and kinkade, nighttime, dark sky, twinkly stars, colorful street lamps along road, natural stone road, indonesian style street food vendors, elegant, fractal architecture, european architecture, 1 6 th century architecture, highly detailed, insanely detailed, sharp focus, vibrant and vivid, smooth, cinematic, high contrast, hdr, 4 k, trending on artstation, archviz, unreal engine, hyperrealistic, dof
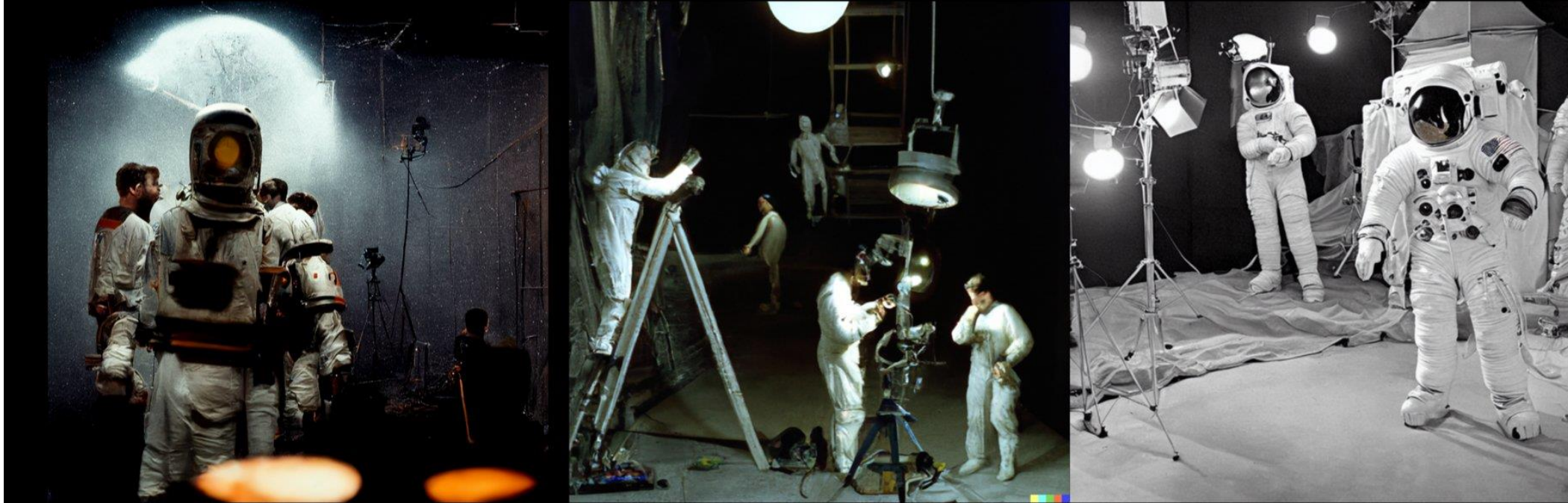LINK

Some comparisons and thoughts…

MIDJOURNEY   DALL-E 2   STABLEDIFFUSION

Behind the scenes of shooting the moon landing, Hollywood studio, 1969, backstage photograph, astronaut actors, lighting

Some comparisons and thoughts…

MIDJOURNEY   DALL-E 2   STABLEDIFFUSION

pixel art of a beautiful vaporwave sunset with palm shadows, DOS game,
retro pixel game, 1990s, screenshot from a 90s retro pixel art dos game

Some comparisons and thoughts…

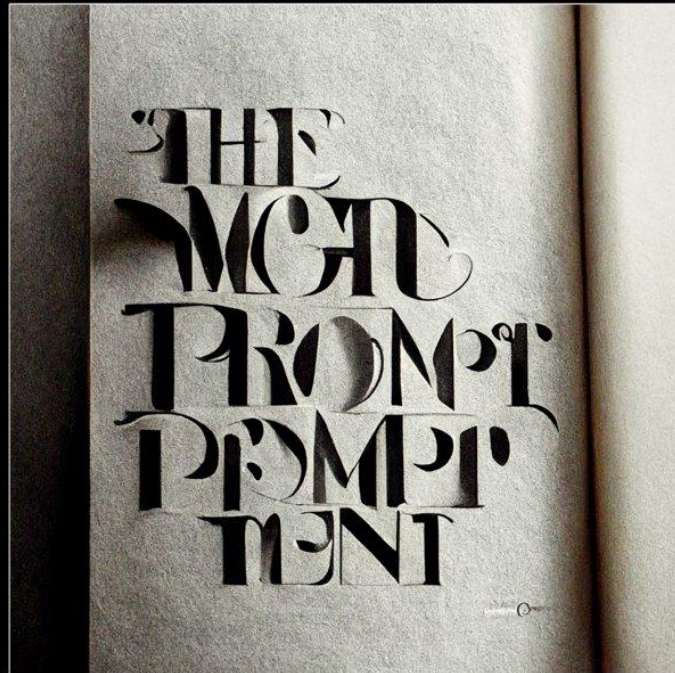MIDJOURNEY   DALL-E 2   STABLEDIFFUSION

low poly game asset, Cthulhu monster, 2000 video game, isometric view

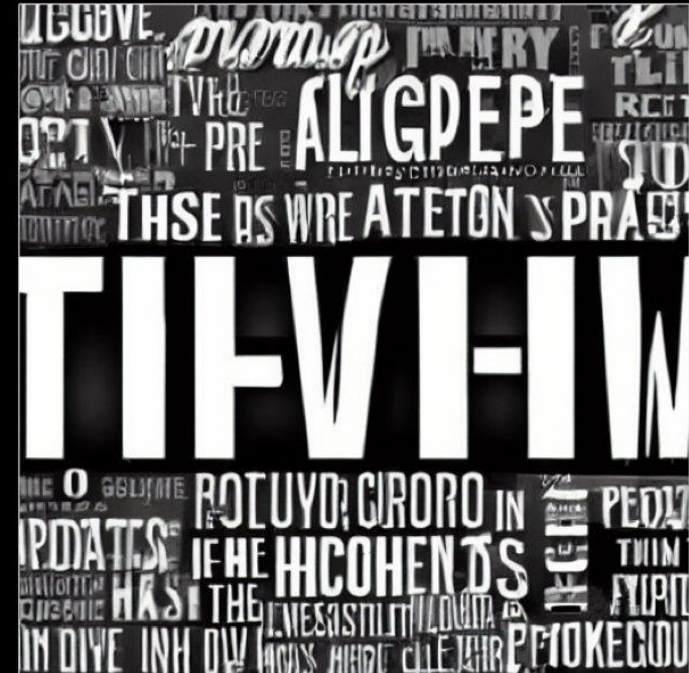# Some comparisons and thoughts…

MIDJOURNEY   DALL·E 2   STABLEDIFFUSION

the word PROMPT, magnificent typography

Textual Inversion, a step too far?

› Tries to *consistently* replicate a *concept or style*

› "Using only 3-5 images of a user-provided concept" resulting in "guiding *personalized* creation"

› Plagiarism?

› Can the dead consent?

› Ethics of producing art in the style of an artist without their consent or perhaps even against their wishes?

@QinniArt

Input samples
@David Revoy

"The streets of Paris in the style of S_*."

"Adorable corgi in the style of S_*."

"Painting of a black hole in the style of S_*."

"Times square in the style of S_*."

"Image reproduction authorized for non-commercial use only."

🤔

What does all of this mean?

› AIs advancing into uncomfortable territory

› Text generation AIs
  › OpenAI's GPT-3
  › EleutherAI's GPT-Neo

› Video AIs
  › DeepFaceLab / deepfakes_faceswap
  › Runway (editing, text-to-video soon?)

› Voice AIs
  › Google's WaveNet

› Implications for:
  › Artists (digital, SFX, stock photography)
  › Journalists
  › Disinformation

› AIs can be used to detect forged art!

"Black-and-white vintage photograph of a 1920s mobster taking a selfie." Generated by DALL-E 2

"A sailboat knitted out of blue yarn." Generated by DALL-E 2

Try it yourself!

› Simple demos:
  https://huggingface.co/spaces/stabilityai/stable-diffusion

› https://huggingface.co/spaces/dalle-mini/dalle-mini

› Stable Diffusion version with more control
  (requires registration, finite free generations):
  https://beta.dreamstudio.ai/dream

› Read about Stable Diffusion's public release:
  https://stability.ai/blog/stable-diffusion-public-release

› All 3 AIs provide some free trial number of
  uses followed by paid access

Stable Diffusion – "an oil painting of President Barack Obama and President Barack Obama shaking hands in front of the Sydney Opera House made by Vincent Van Gogh"

How to draw an owl

1.

1. Draw some circles

2. img2img: "An owl perched on a branch, high-quality, Pixiv, WLOP, Greg Rutkowski, ArtStation. Oil on canvas."

Thank you!