

# Unlocking the Creative Potential

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**Mr. GU Zhan (Sam)**

# Generative AI (GAI)

is like your robot friend who can make new things, like writing stories, drawing pictures, or even coming up with ideas, all on its own.

A virtual Picasso with a typewriter



# ■ Agenda

1. Evolutionary History of AI, GAI/AIGC
2. Examples and Applications of GAI
3. Workshop: Generative AI Storytelling Adventure

# 1. Evolutionary History of AI, GAI/AIGC

Early developments in Artificial Intelligence

The emergence of Generative AI

Milestones in AI-Generated Content

## 1956 Dartmouth Conference: The Founding Fathers of AI



John McCarthy



Marvin Minsky



Claude Shannon



Ray Solomonoff



Alan Newell



Herbert Simon



Arthur Samuel



Oliver Selfridge



Nathaniel Rochester



Trenchard More

<https://akin-agunbiade.medium.com/the-first-wave-of-ai-1956-1973-f10860a807f9>

# 1. Evolutionary History of AI, GAI/AIGC

Early developments in Artificial Intelligence

The emergence of Generative AI

Milestones in AI-Generated Content



<https://github.com/junyanz/CycleGAN>

# 1. Evolutionary History of AI, GAI/AIGC



<https://en.wikipedia.org/wiki/DeepDream>

Early developments in Artificial Intelligence

The emergence of Generative AI

Milestones in AI-Generated Content

# 1. Evolutionary History of AI, GAI/AIGC

**2000s Chatbots and Basic Text Generation:** text-based conversations.

**2010s Natural Language Processing (NLP)**  
**Advancements:** OpenAI's GPT (Generative Pre-trained Transformer) improved text generation capabilities.

**2014 DeepDream:** Google's DeepDream surreal and artistic images.

**2015 Neural Style Transfer:** artistic styles from one image to another emerged.

**2016 Abstractive Text Summarization:** human-like summaries of text.

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ChatGPT ●

**Write a thank-you note  
to our babysitter for the last-minute  
help**



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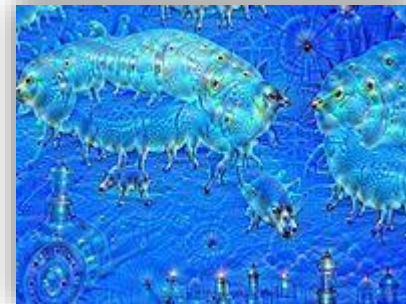
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The original image



10 iterations of DeepDream



50 iterations of DeepDream

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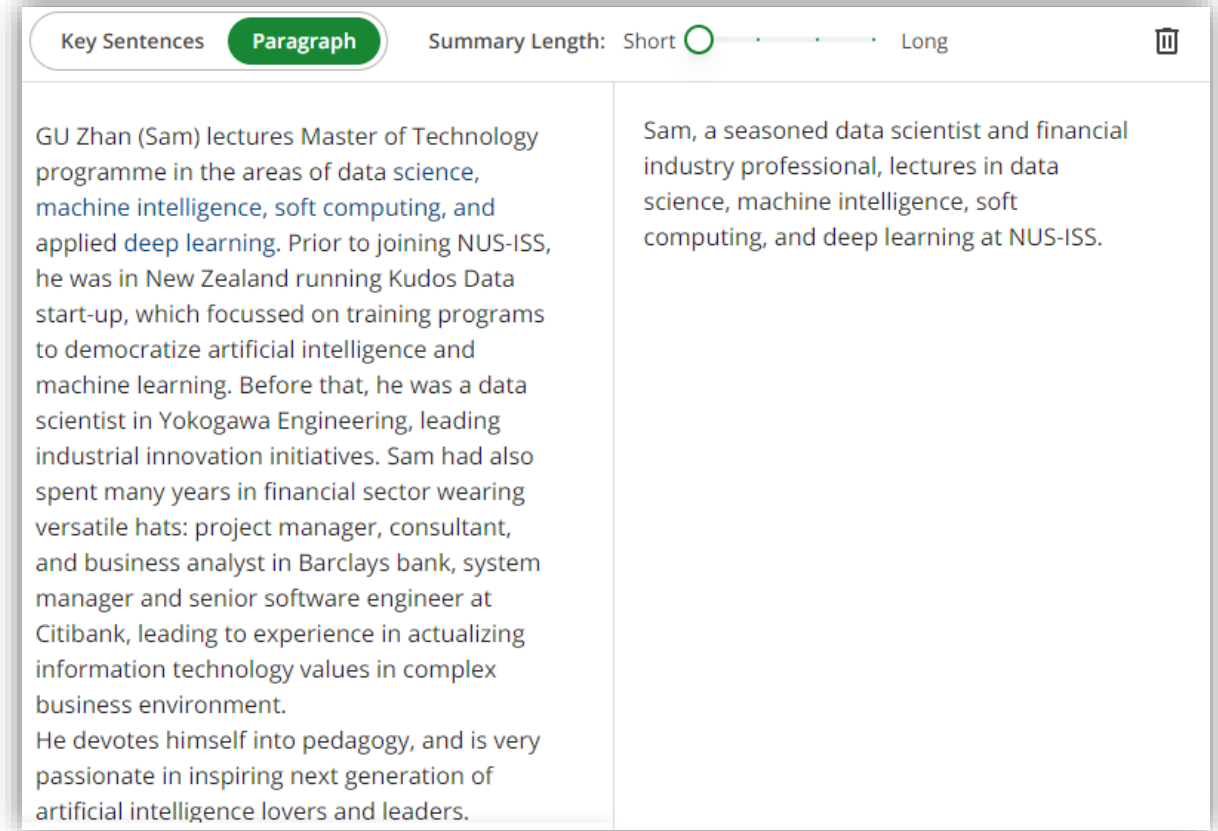
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The screenshot shows a web-based text summarization tool. At the top, there are two tabs: 'Key Sentences' and 'Paragraph', with 'Paragraph' being the active tab. To the right of the tabs is a 'Summary Length' slider with 'Short' and 'Long' labels. The main content area is divided into two columns. The left column contains a full paragraph about GU Zhan (Sam), a data scientist and financial industry professional. The right column contains a concise summary of the paragraph. The summary highlights Sam's roles as a data scientist, financial industry professional, and lecturer in data science, machine intelligence, soft computing, and deep learning at NUS-ISS.

Key Sentences Paragraph Summary Length: Short Long

GU Zhan (Sam) lectures Master of Technology programme in the areas of data science, machine intelligence, soft computing, and applied deep learning. Prior to joining NUS-ISS, he was in New Zealand running Kudos Data start-up, which focussed on training programs to democratize artificial intelligence and machine learning. Before that, he was a data scientist in Yokogawa Engineering, leading industrial innovation initiatives. Sam had also spent many years in financial sector wearing versatile hats: project manager, consultant, and business analyst in Barclays bank, system manager and senior software engineer at Citibank, leading to experience in actualizing information technology values in complex business environment. He devotes himself into pedagogy, and is very passionate in inspiring next generation of artificial intelligence lovers and leaders.

Sam, a seasoned data scientist and financial industry professional, lectures in data science, machine intelligence, soft computing, and deep learning at NUS-ISS.

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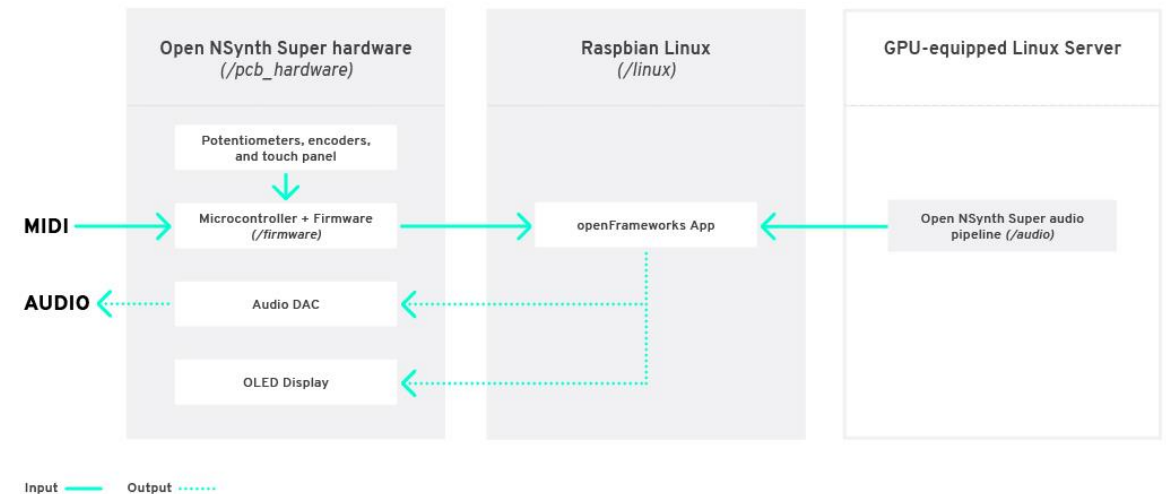
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<https://youtu.be/0fjopD87pyw>





# 1. Evolutionary History of AI, GAI/AIGC



**2018 AI Art at Auctions:** portrait "Edmond de Belamy" by Obvious, was sold at Christie's auction (\$?), gaining mainstream attention.

**2019 Deepfake Technology:** realistic video and audio simulations.

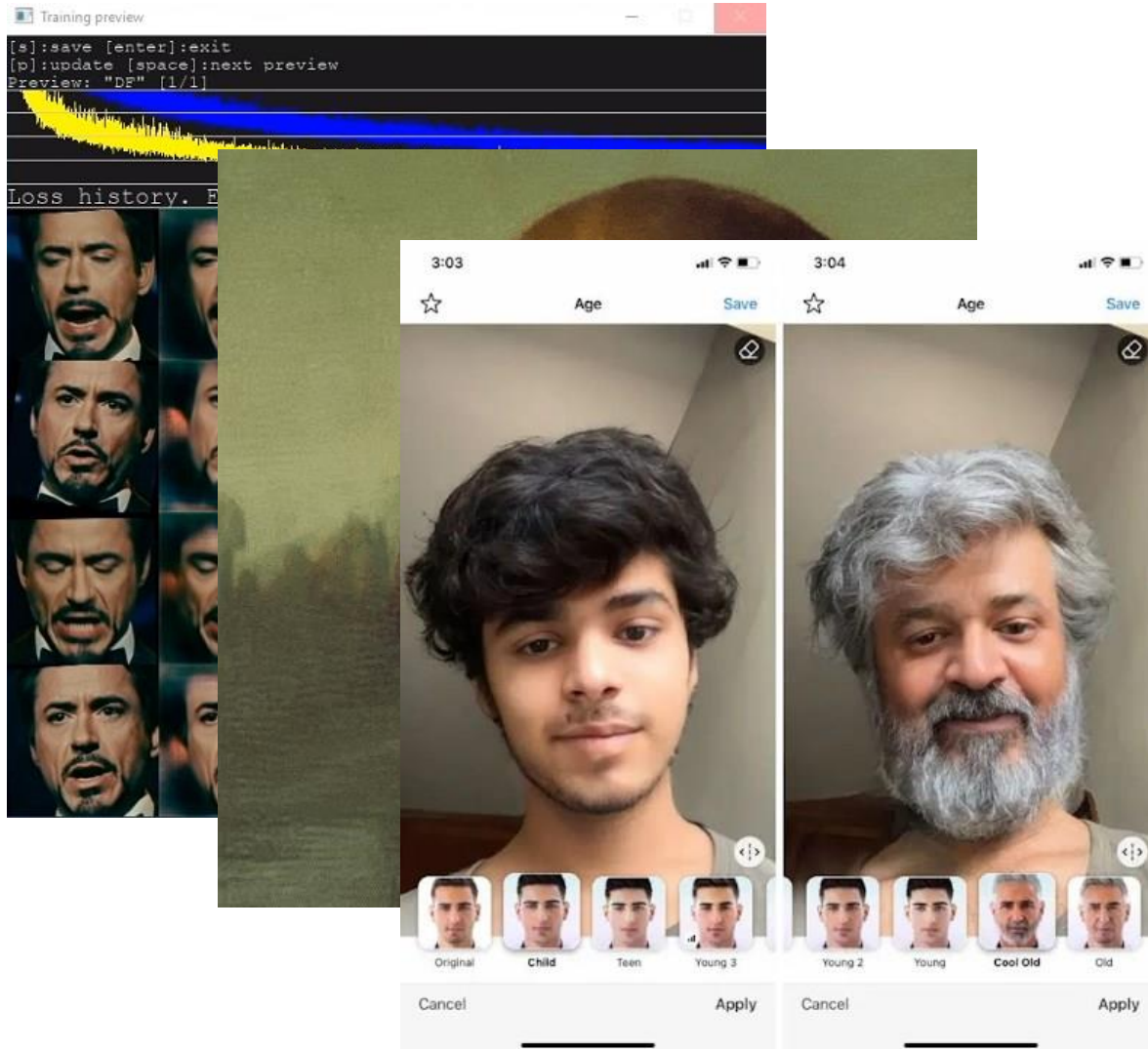
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**2020 AI-Generated Novels:** "The Day a Computer Writes a Novel" first AI-written novel to pass the first screening for a national literary prize in Japan.

**2020s LLM and Beyond:** ability to generate coherent and contextually relevant multi-media across a wide range of topics and applications.

**2020s Ethical Discussions:** Increased attention on the ethical implications of AI-generated content, including concerns about misinformation, deepfakes, and bias in AI models.

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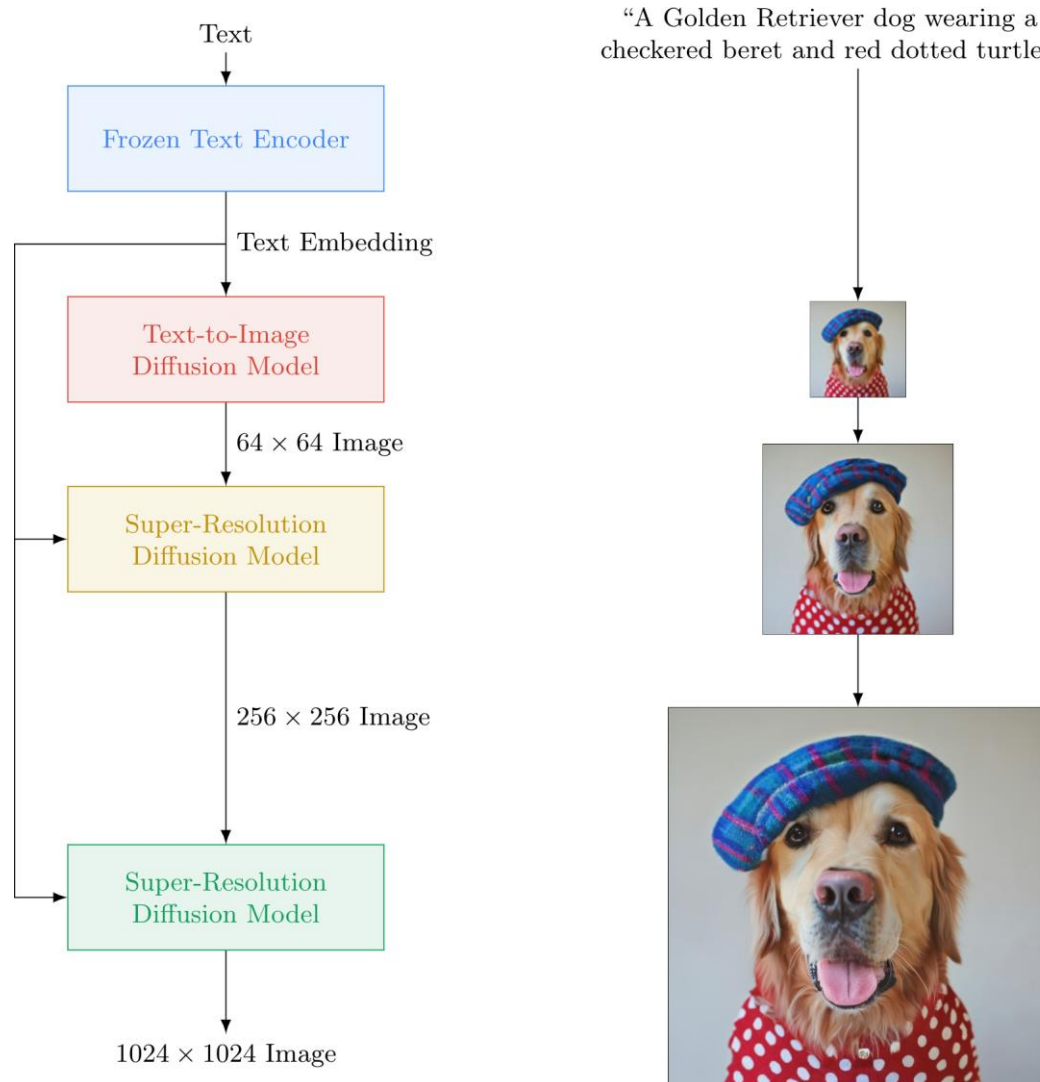
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<https://imagen.research.google/>

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TECHNOLOGY & INNOVATION — MARCH 24, 2016

## Japanese AI Writes a Novel, Nearly Wins Literary Award

Writers beware, an AI-written novel just made it past the first round of screening for a national literary prize in Japan. The novel this program co-authored is titled, *The Day A Computer Writes A Novel*.

Here's an excerpt from the novel to give you an idea as to what human contestants were up against:

*"I writhed with joy, which I experienced for the first time, and kept writing with excitement.*

*"The day a computer wrote a novel. The computer, placing priority on the pursuit of its own joy, stopped working for humans."*

<https://bigthink.com/technology-innovation/a-japanese-ai-wrote-a-novel-almost-wins-literary-award/>

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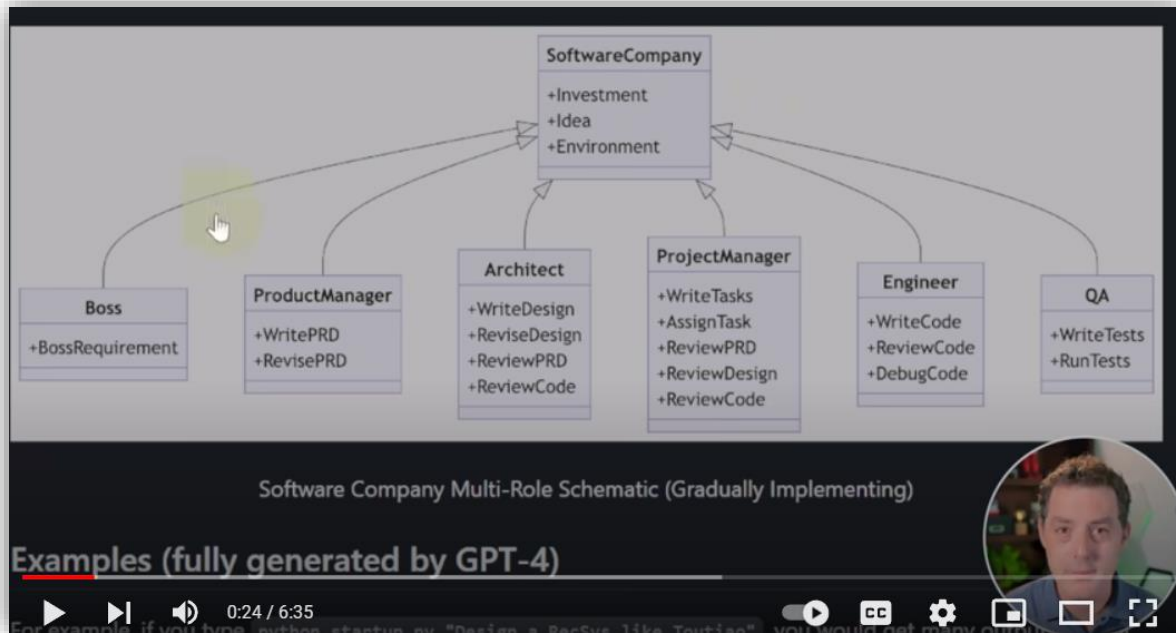
# 1. Evolutionary History of AI, GAI/AIGC

## MetaGPT: The Multi-Agent Framework [↗](#)



Assign different roles to GPTs to form a collaborative software entity for complex tasks.

<https://github.com/geekan/MetaGPT>



Matthew Berman: Build A Startup With One Prompt!!

[https://youtu.be/uT75J\\_KG\\_aY](https://youtu.be/uT75J_KG_aY)

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## Unethical Examples:

False Narratives

Political Manipulation Content Amplification

Data Bias

Identity Fraud

Algorithmic Bias



## Ethical Approaches:

Transparency

Auditing and Oversight

User Education

Legislation and Regulation

Ethical AI Development

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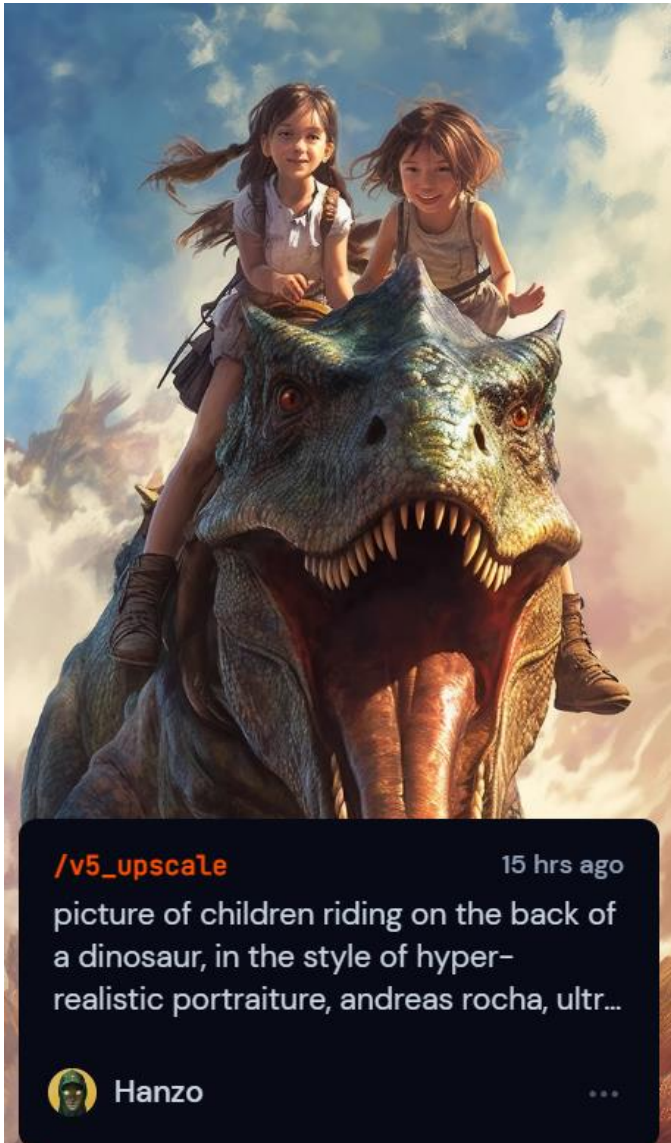


“An astronaut  
riding a horse in  
photorealistic  
style”

Text Prompt → Image



## 2. Examples and Applications of GAI



← MidJourney

<https://www.midjourney.com/showcase/recent/>

*Could you find the prompt?*

**TEXTure: Text-Guided Texturing of 3D Shapes**

<https://youtu.be/eQMNWbBQTNU>

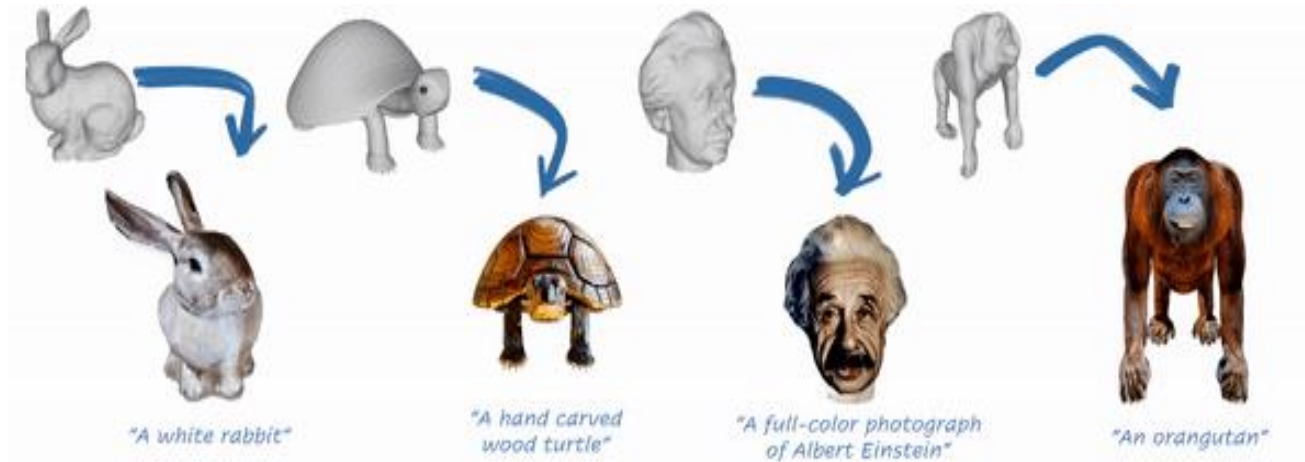
Text to Image

DALL-E 2

MidJourney

Stable Diffusion

TEXTure (Texture only)



## 2. Examples and Applications of GAI



**GET3D: A Generative Model of High Quality 3D Textured Shapes Learned from Images**

<https://nv-tlabs.github.io/GET3D/>

Image to Mesh

GET3D

nvdiffric

pix2pix3D

## 2. Examples and Applications of GAI



Image to Text

BLIP-2

### Image Captioning

"two cartoon monsters sitting around a campfire"

### Visual question answering

prompt = "Question: What is a dinosaur holding? Answer:"

"A torch"

<https://huggingface.co/blog/blip-2>



## 2. Examples and Applications of GAI

# Human AI Generative Music

For your video content, podcasts and apps

Text to Music

Mubert

⚡ **Generate a track**  **Search by reference** BETA 

1. Enter prompt

a light and sunny mood by the sea side

2. Set duration

00:45

Generate track

or choose:

Genres

Moods

Activities



A light and sunny mood by the sea side

Text-To-Music

130

F#

Track

0:45



<https://mubert.com/render>

## 2. Examples and Applications of GAI

Surreal

Realistic

Stylized

A teddy bear painting a  
portrait



Robot dancing in times  
square

Cat watching TV with a  
remote in hand

Meta AI: Make-A-Video  
<https://makeavideo.studio/>



Text to Video

Fliki

Make-A-Video

Phenaki

## 2. Examples and Applications of GAI

Single image

Pair of images

Input image



Image to Video

Make-A-Video

<https://makeavideo.studio/>



## 2. Examples and Applications of GAI



*Prompt “low-poly rainbow dragon”*

*Prompt “elf warrior character in vector art for videogame”*

### 3. Workshop: Generative AI Storytelling Adventure



Refer to this [site](https://bit.ly/GAI-GUIDE) for workshop guide:

<https://bit.ly/GAI-GUIDE>

# Appendix

- [GPT-3 Playground](#): This is a playground that allows you to test and experiment with OpenAI's GPT-3 language model. You can input text prompts and see how the model generates responses in real-time. The playground also includes various options for adjusting the model's settings and parameters.
- [This Person Does Not Exist](#): This website generates realistic-looking human faces using a Generative Adversarial Network (GAN). Every time you refresh the page, a new face is generated.
- [Artbreeder](#): This website allows you to create and explore a wide range of AI-generated images, from portraits to landscapes to abstract art. You can mix and match different elements to create unique images, and even "evolve" your creations over time.
- [Deep Dream Generator](#): This website uses a neural network to "dream" up surreal and psychedelic images based on your input. You can upload your own images or use the website's pre-existing library.