



Generative AI with Diffusion Models

Part 6: Wrap-up & Assessment

Agenda

- Part 1: From U-Nets to Diffusion

- Part 2: Denoising Diffusion Probabilistic Models

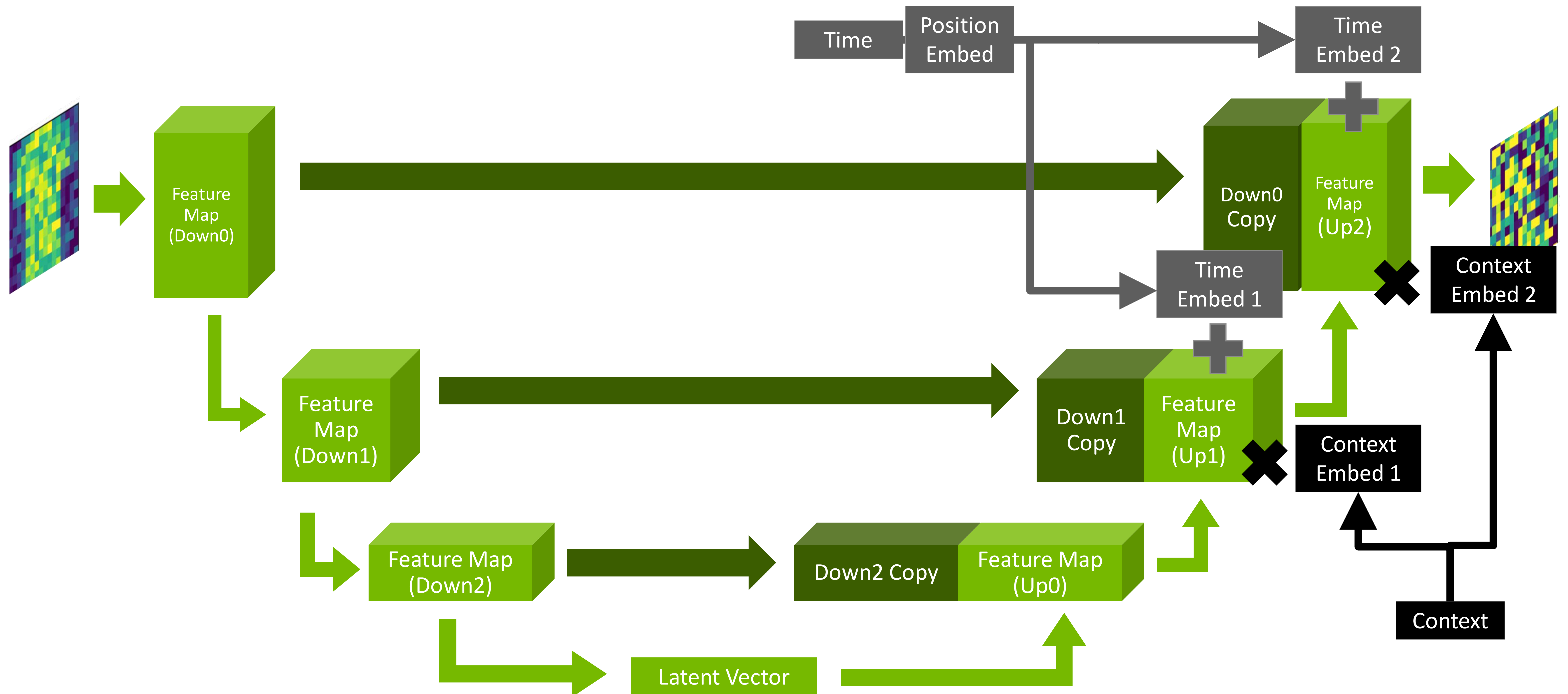
- Part 3: Optimizations

- Part 4: Classifier-Free Diffusion Guidance

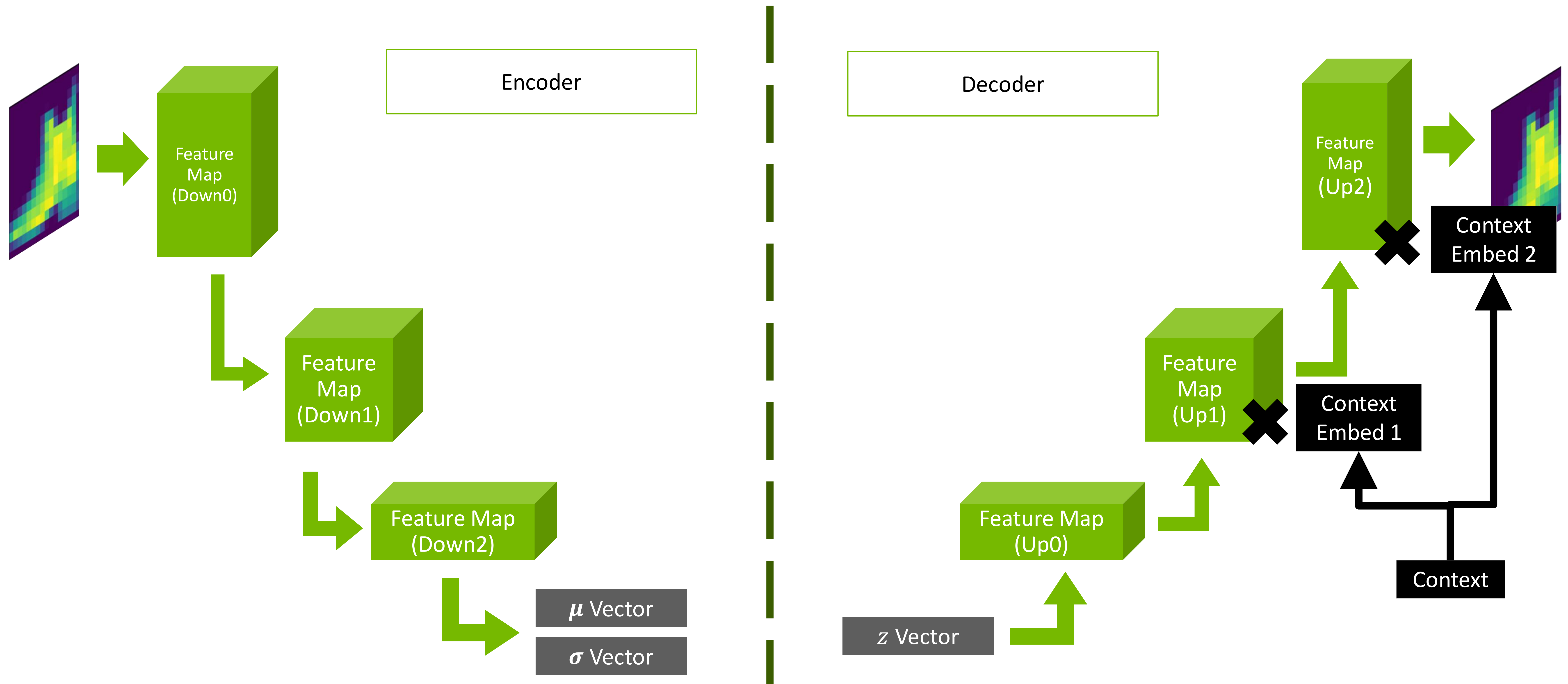
- Part 5: CLIP
- Part 6: Wrap-up & Assessment

Variational Autoencoders (VAE)

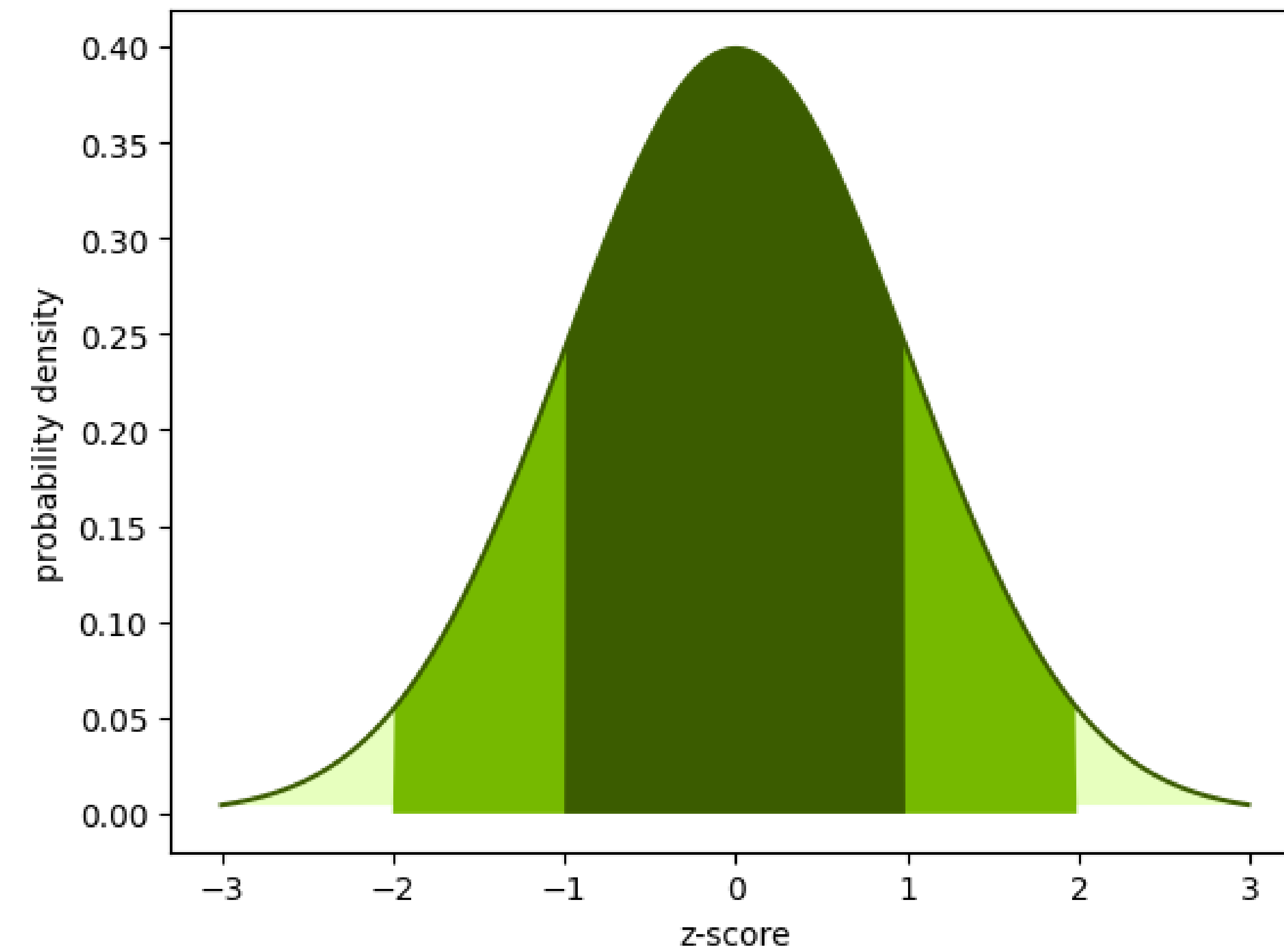
U-Net



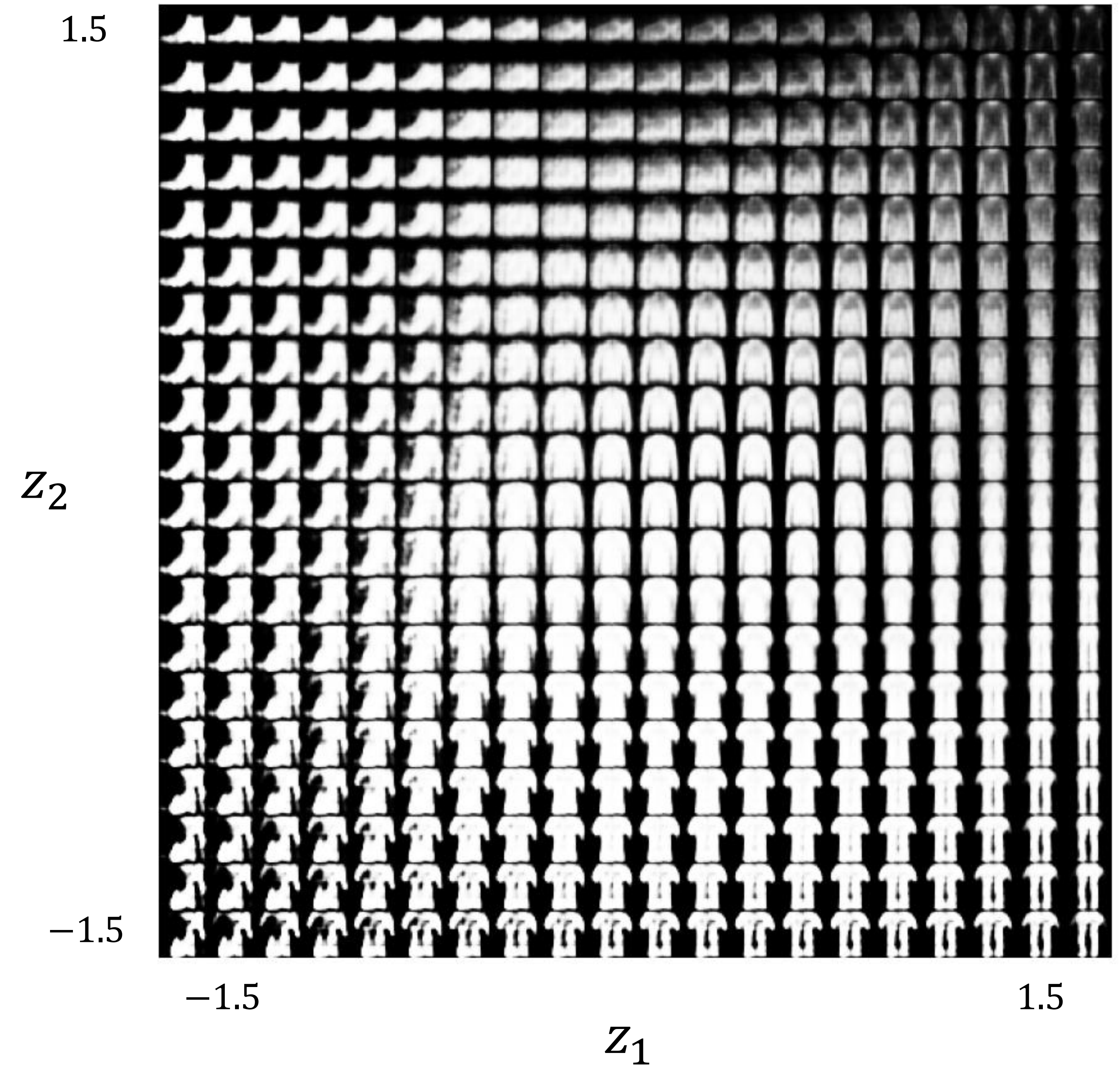
Variational Autoencoder



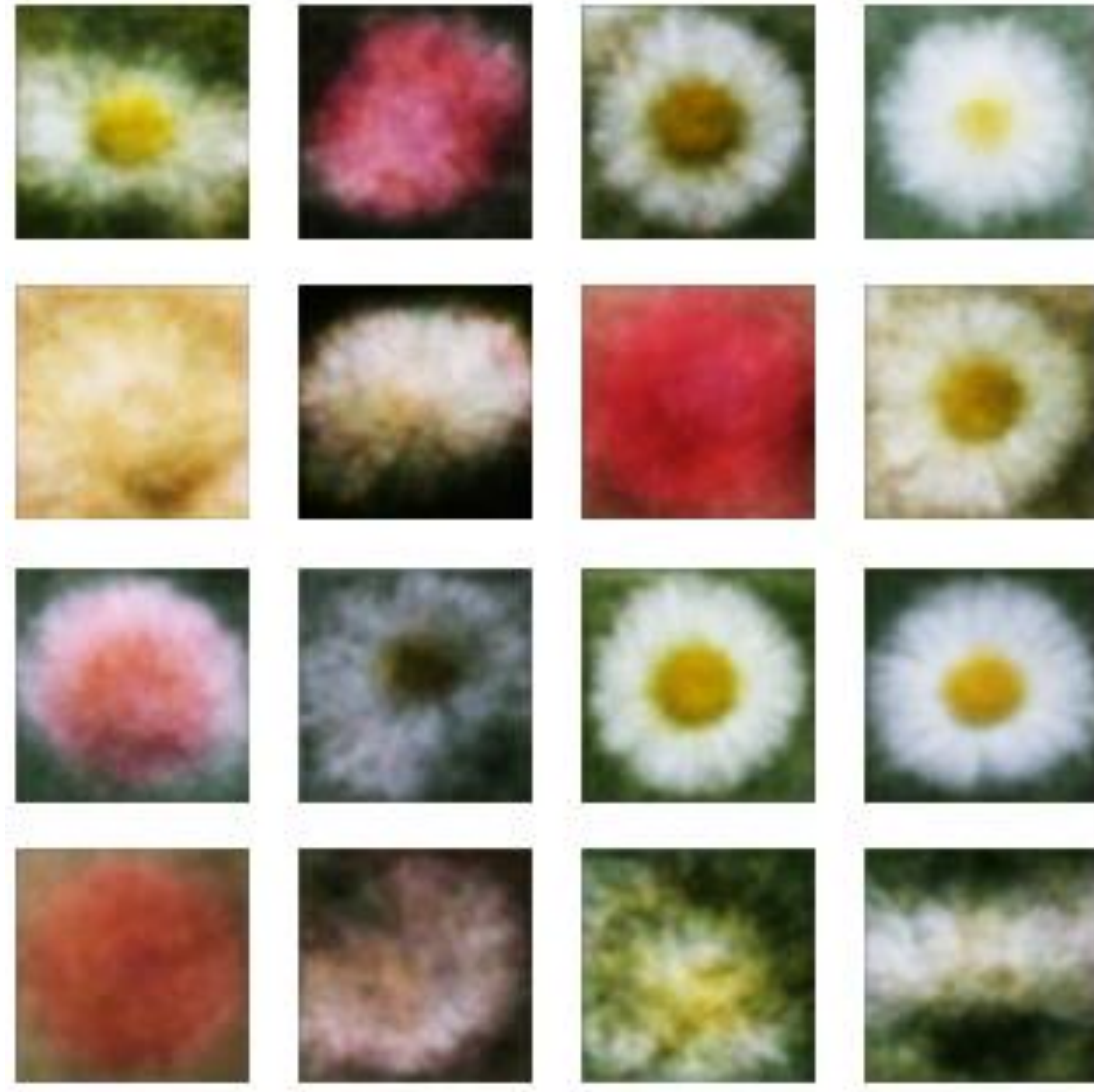
Variational Autoencoder



FashionMNIST
2 Latent Variables



Variational Autoencoder



Modified TF Flowers
20 Latent Variables
16 Random Images



State of the Art Models

State of the Art Models

All of them are used

A visualization of a diffusion model, showing a green, textured, and somewhat abstract landscape or terrain. The word "Diffusion" is overlaid in white text.

Diffusion

A visualization of a Variational Autoencoder (VAE) model, showing a grid of six small, blurry images of flowers. The word "VAE" is overlaid in white text.

VAE

A visualization of a Contrastive Language-Image Pre-training (CLIP) model, showing a 2x4 grid of colored squares with numerical values. The word "CLIP" is overlaid in white text.

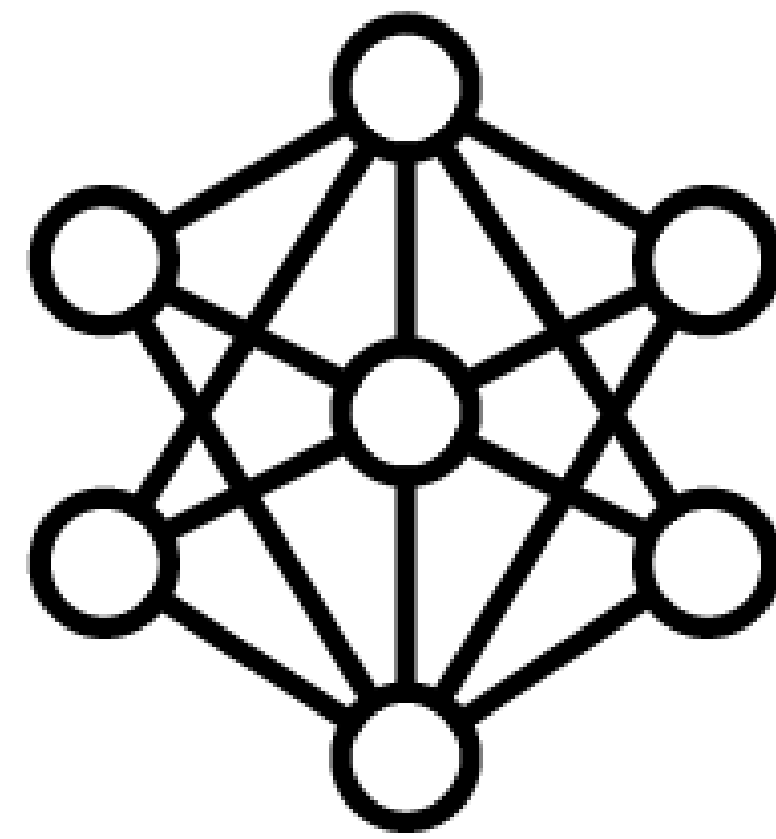
0.20	0.27	0.15	0.16
0.20	0.18	0.26	0.20

CLIP

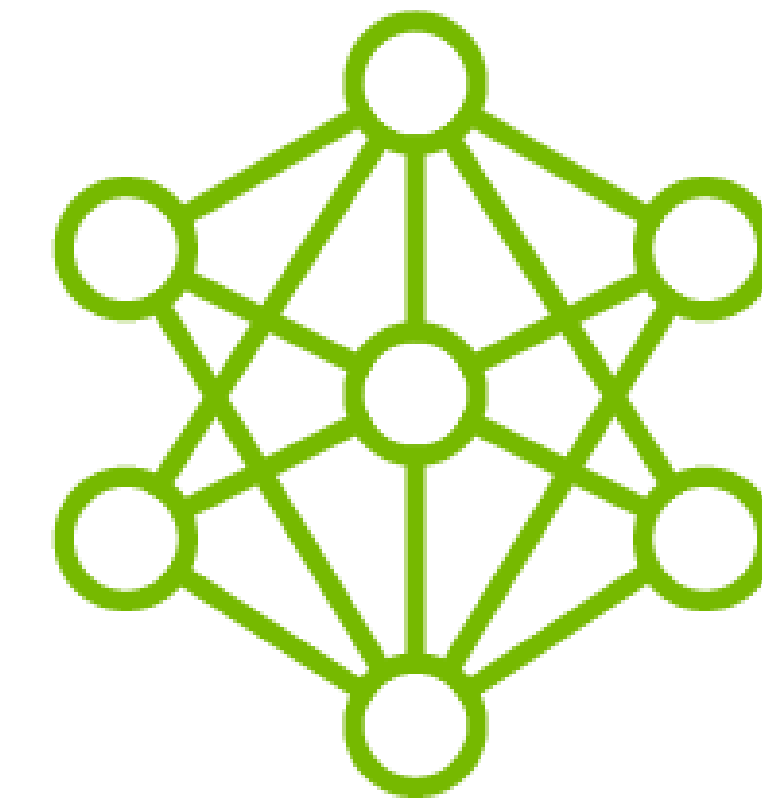
A visualization of a Generative Adversarial Network (GAN) model, showing a split image of a landscape with a body of water and mountains. The word "GAN" is overlaid in white text.

GAN

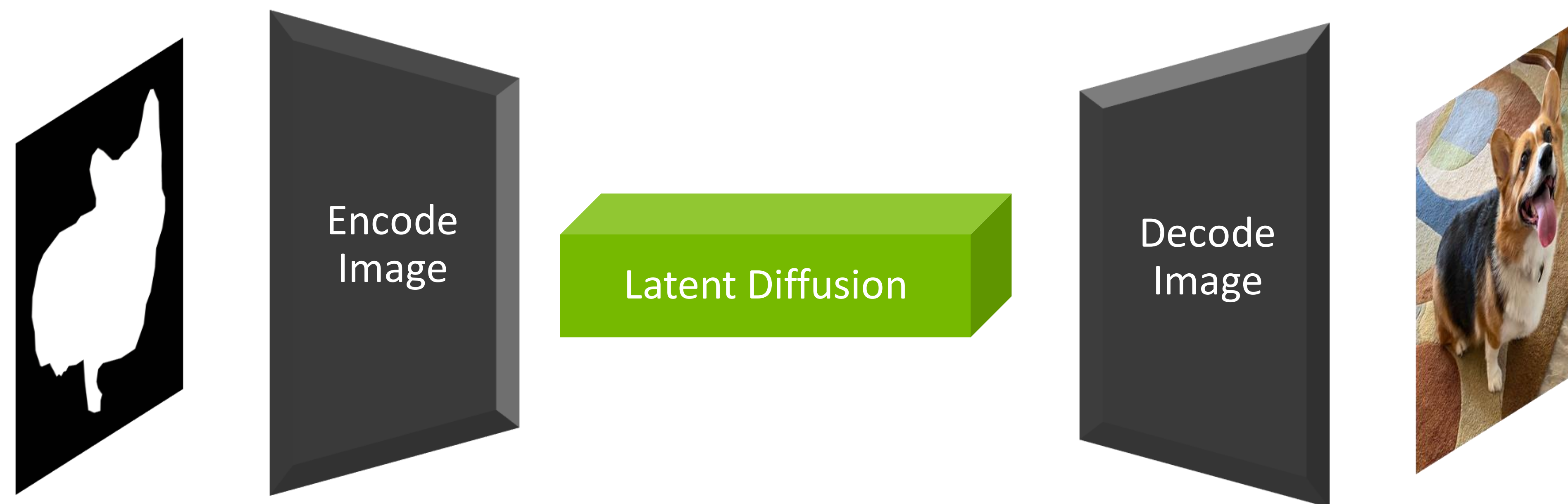
Latent Diffusion



VAE



Diffusion



Tiled Upsampling

Transposed Convolution Review

Kernel

.25	.25
.25	.25

Image

1	0	1
0	1	0
1	0	1

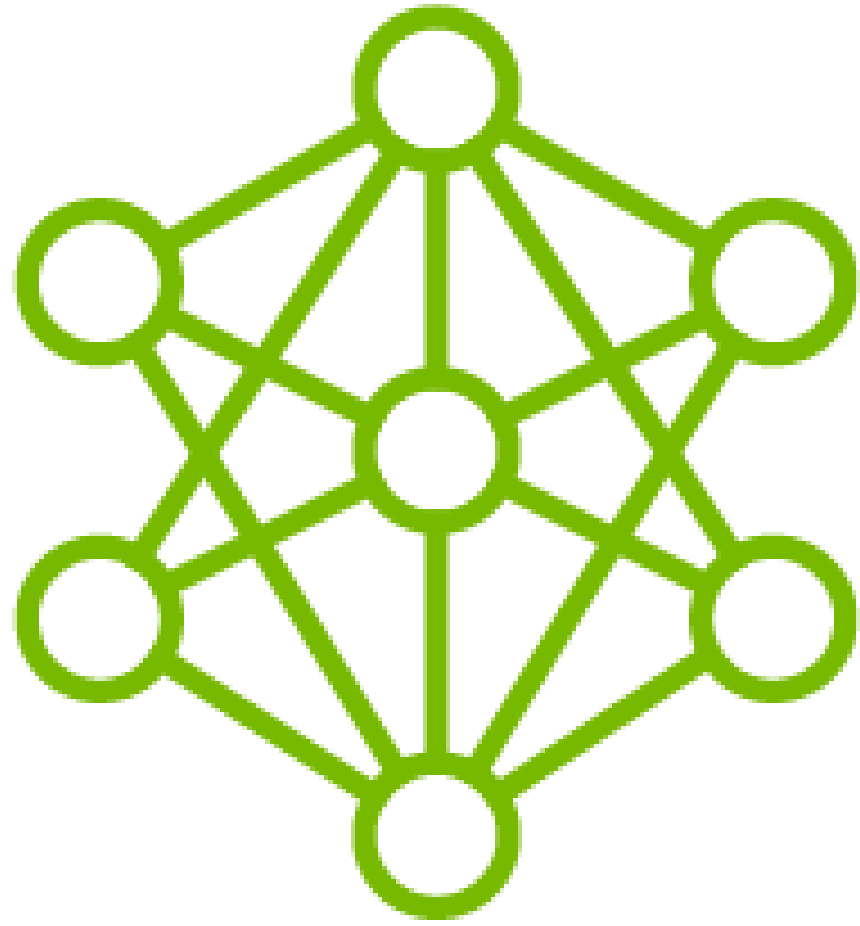
Output

.25	0	0	.25
0	.25	.25	0
0	.25	.25	0
.25	0	0	.25

Tiled Upsampling

Convolving with a Neural Network

Kernel?



Image

1	0	1
0	1	0
1	0	1

Output

?	?	?	?
?	?	?	?
?	?	?	?
?	?	?	?

Tiled Upsampling

Convolving with a Neural Network

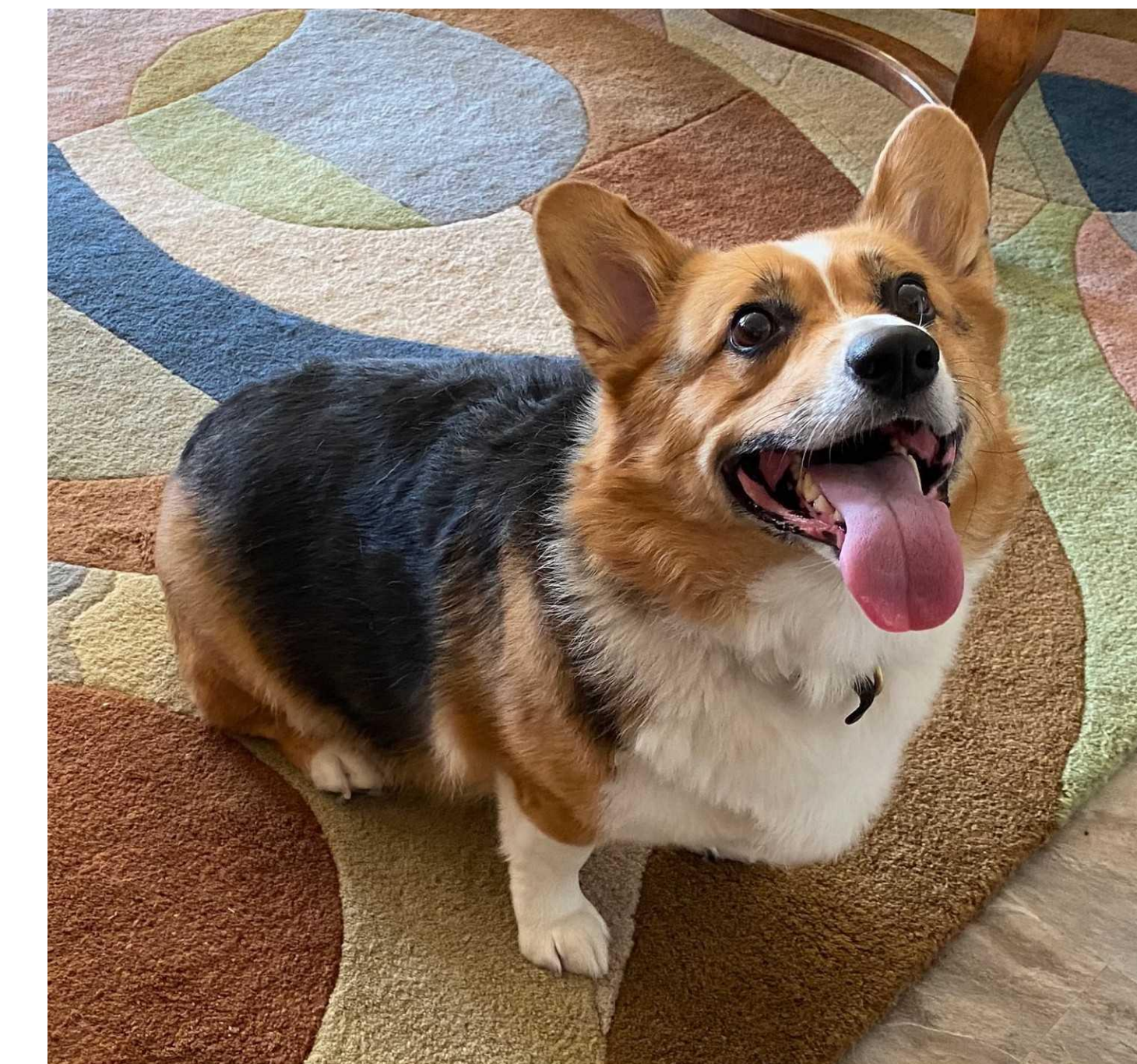
Kernel?



Image



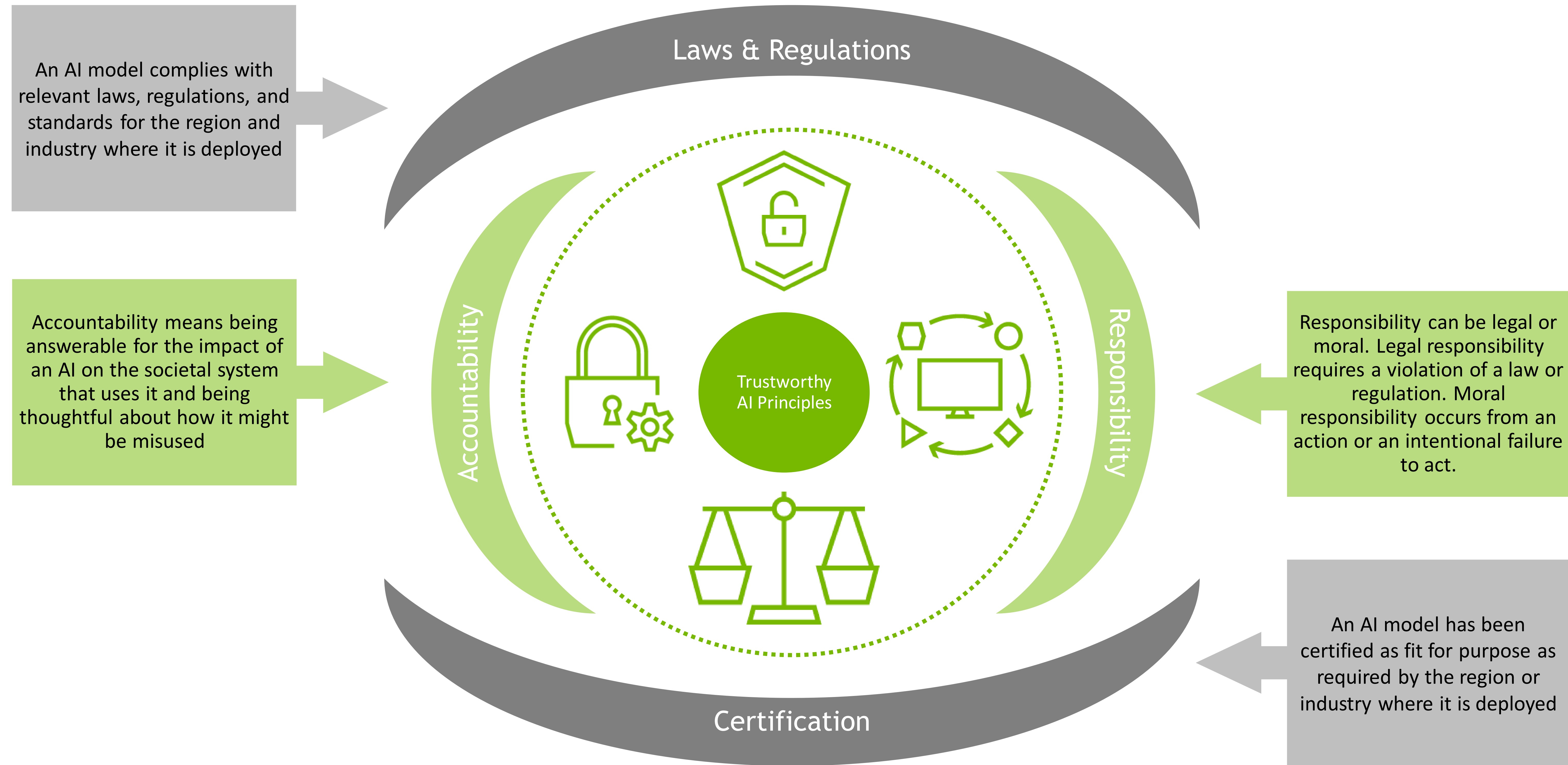
Output





Trustworthy AI

Foundations of Trustworthiness



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Code

master

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- trainers
- util
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- LICENSE.md**
- README.md
- requirements.txt
- test.py
- train.py

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mingyuliutw non-commercial release 1eb35f1 · 4 years ago History

177 lines (90 loc) · 18.7 KB

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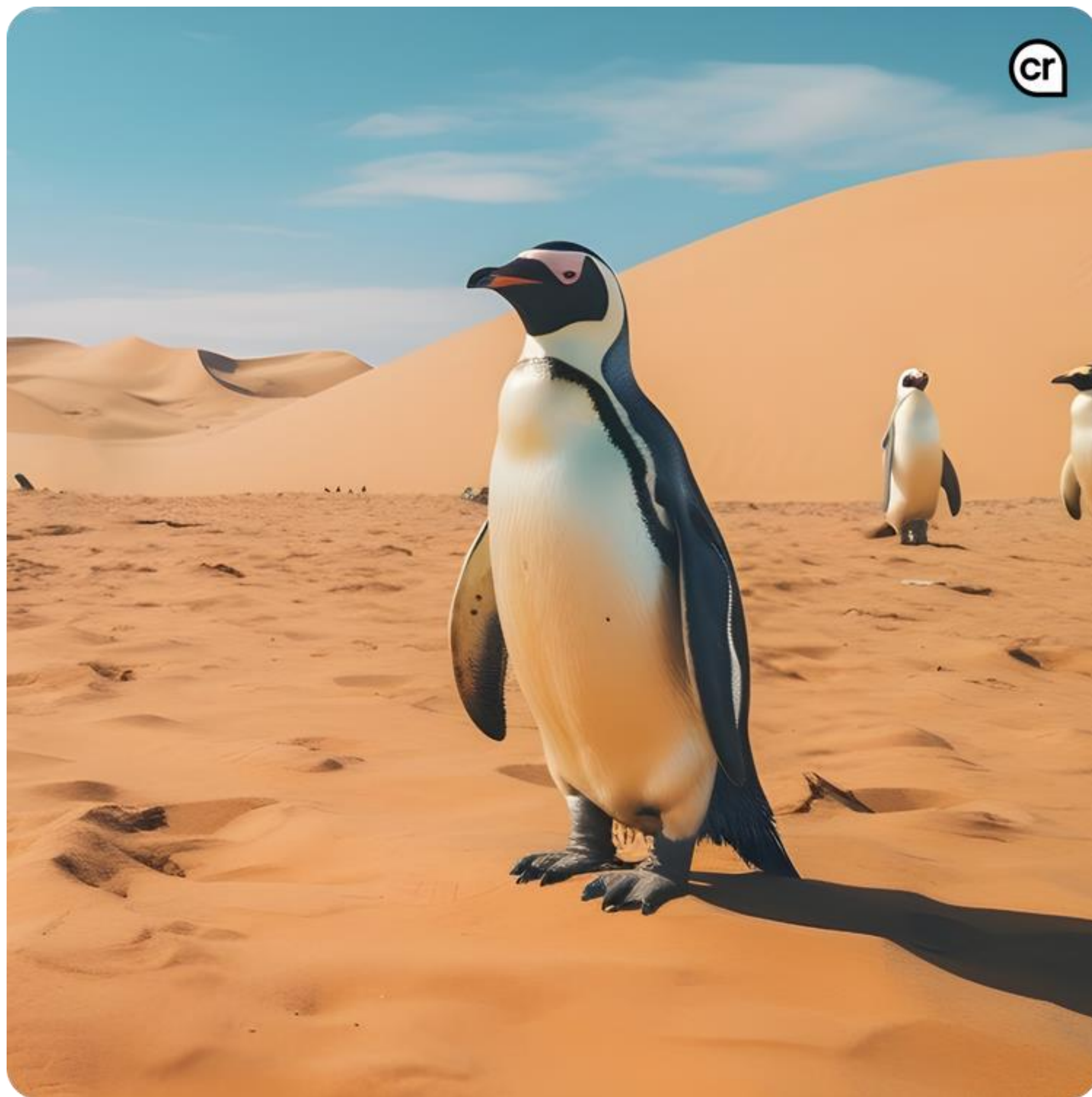
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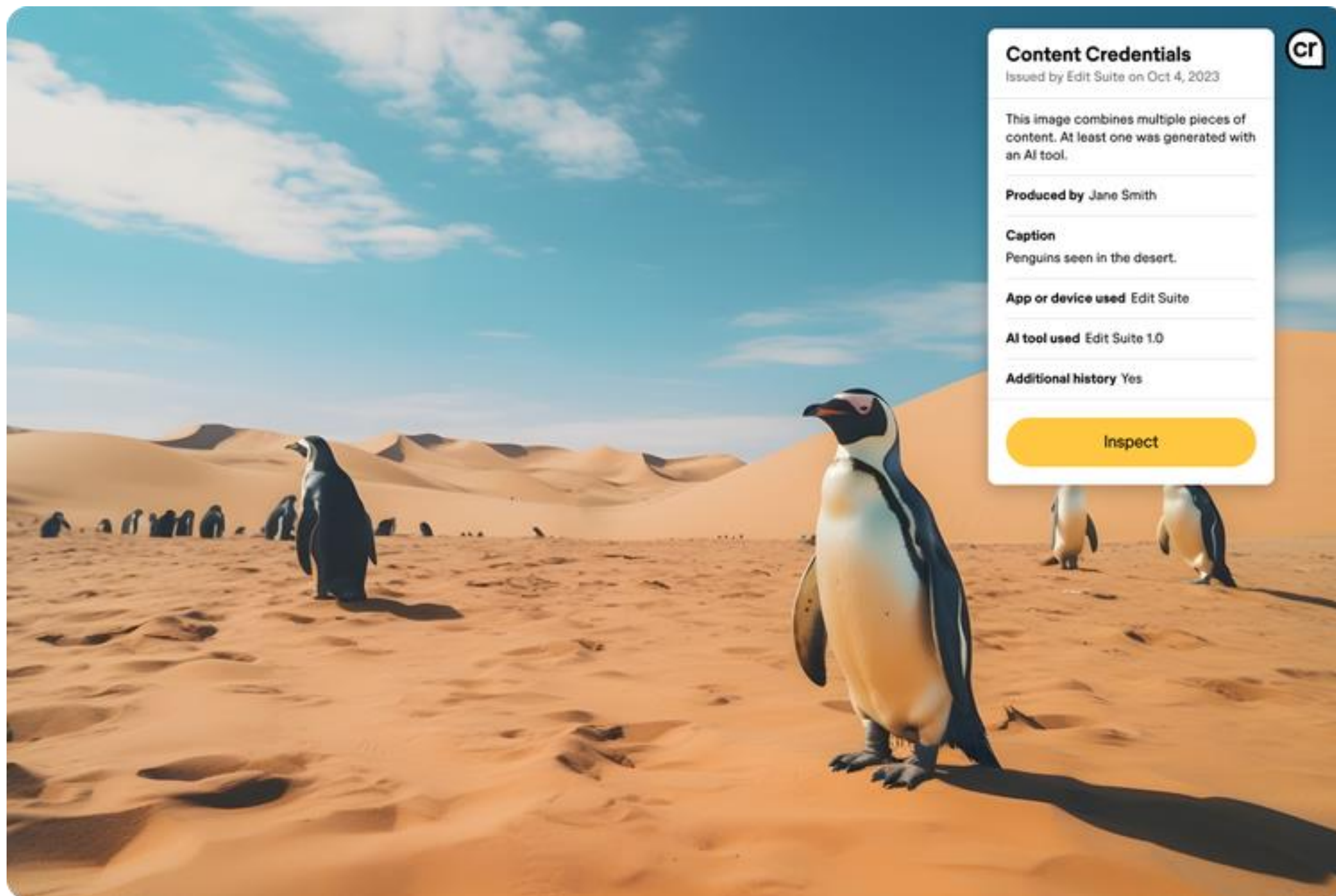
Trustworthy AI Tools



**Content
Authenticity
Initiative**

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Trustworthy AI Tools



All content generated with Adobe Firefly is clearly labeled and can be inspected

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 Apr 21, 2023

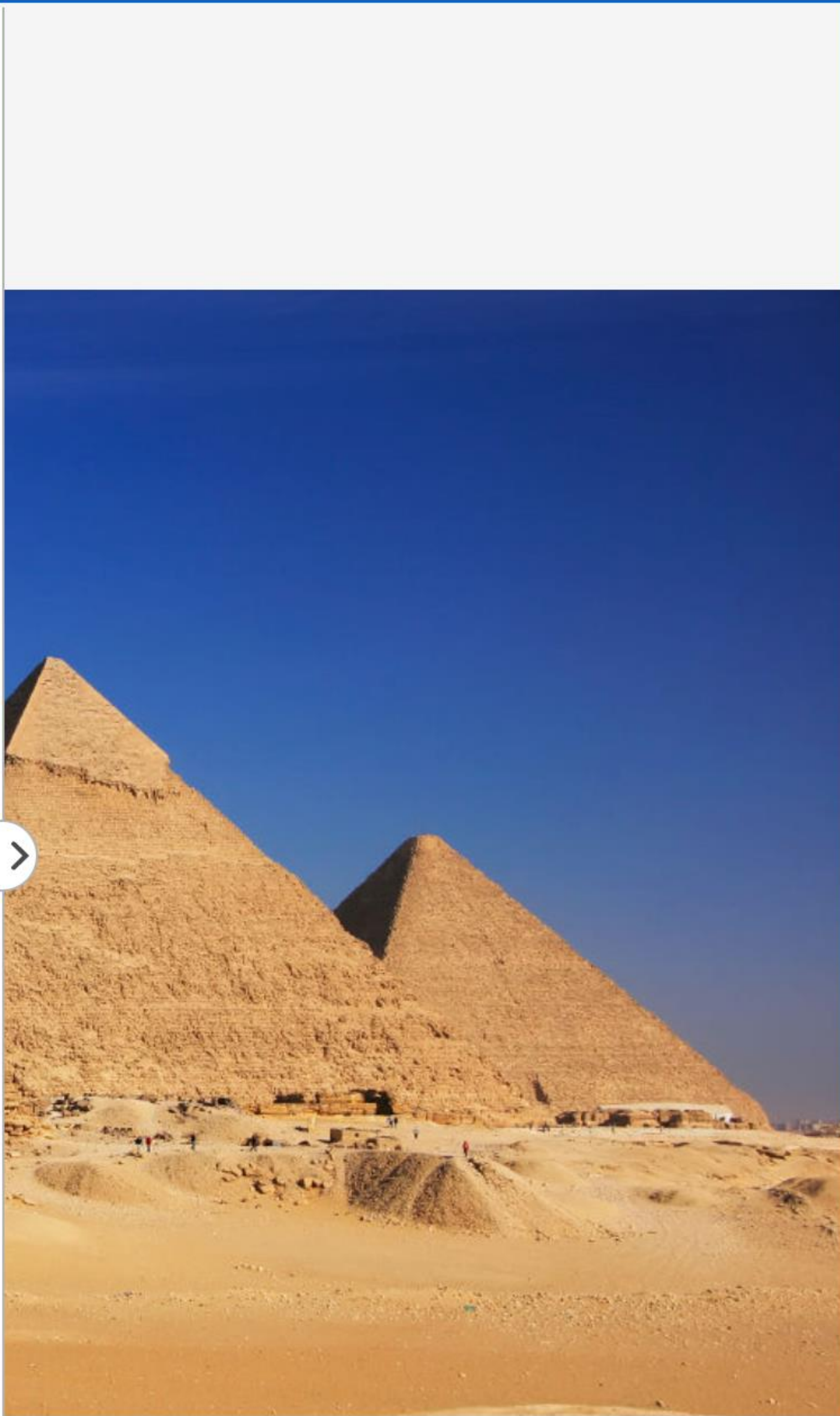
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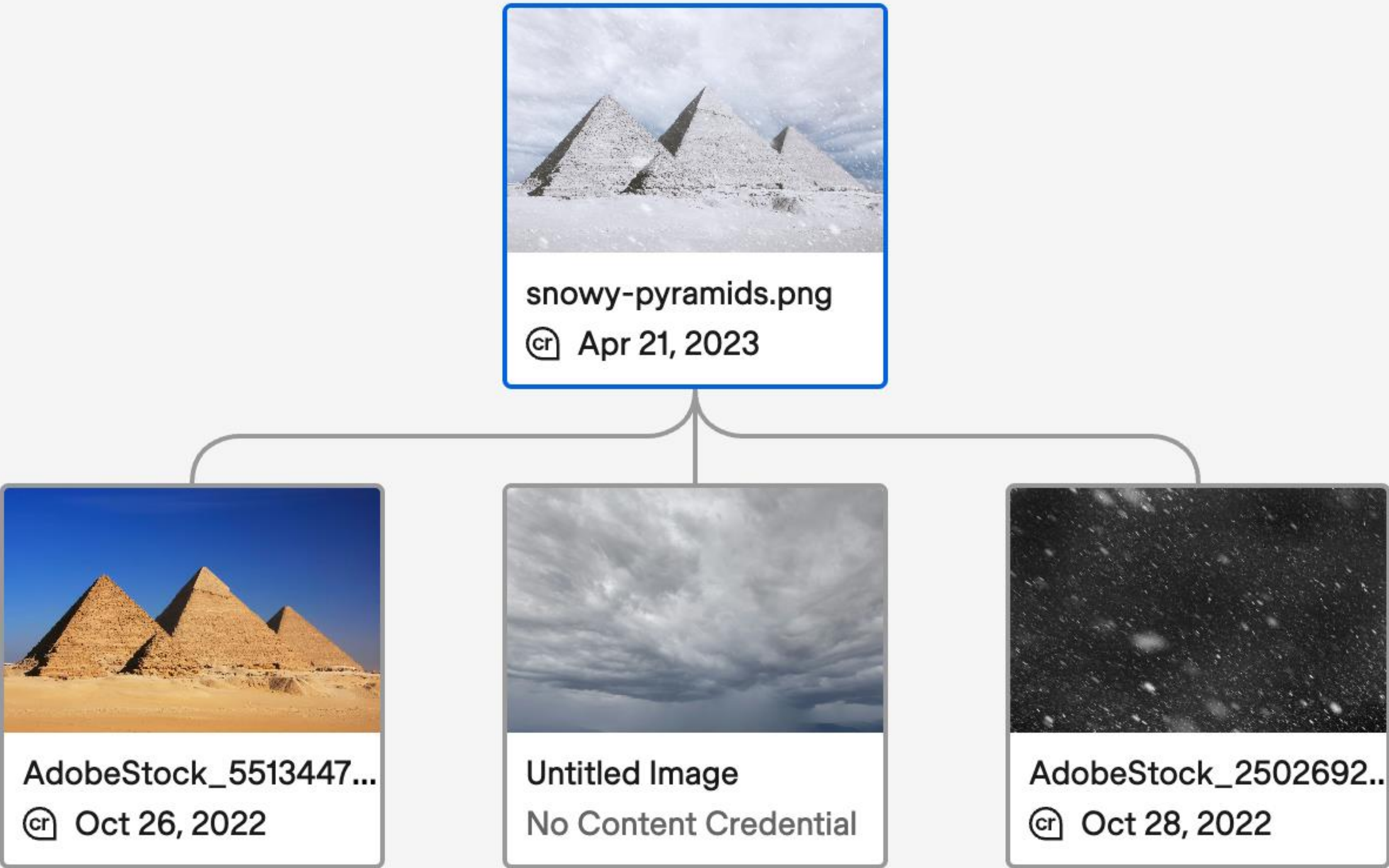
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 Compare

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**Content
Authenticity
Initiative**

The background features a series of overlapping, diagonal, wavy bands in various shades of green, ranging from light lime to dark forest green. The bands create a sense of depth and movement, sloping downwards from left to right. On the far left, there is a solid vertical green bar.

Adobe Firefly

Adobe Firefly

<https://firefly.adobe.com/>



Text to Image

Generate images from a detailed text description.

Create with Firefly



Generative Fill

Use a brush to remove objects or paint in new ones.

Create with Firefly



Text Effects

Apply styles or textures to words and phrases.

Create with Firefly


Prompt Engineering

State-of-the-art Models

Better understanding the vocabulary the model was trained will make it easier to influence the results.



“Portrait of a happy canine with a 17mm lens”



Good Luck!



Adobe Firefly

Two cute robots that look like computer boards
waving goodbye under a starry sky

