

Generative Al with Diffusion Models

Part 6: Wrap-up & Assessment



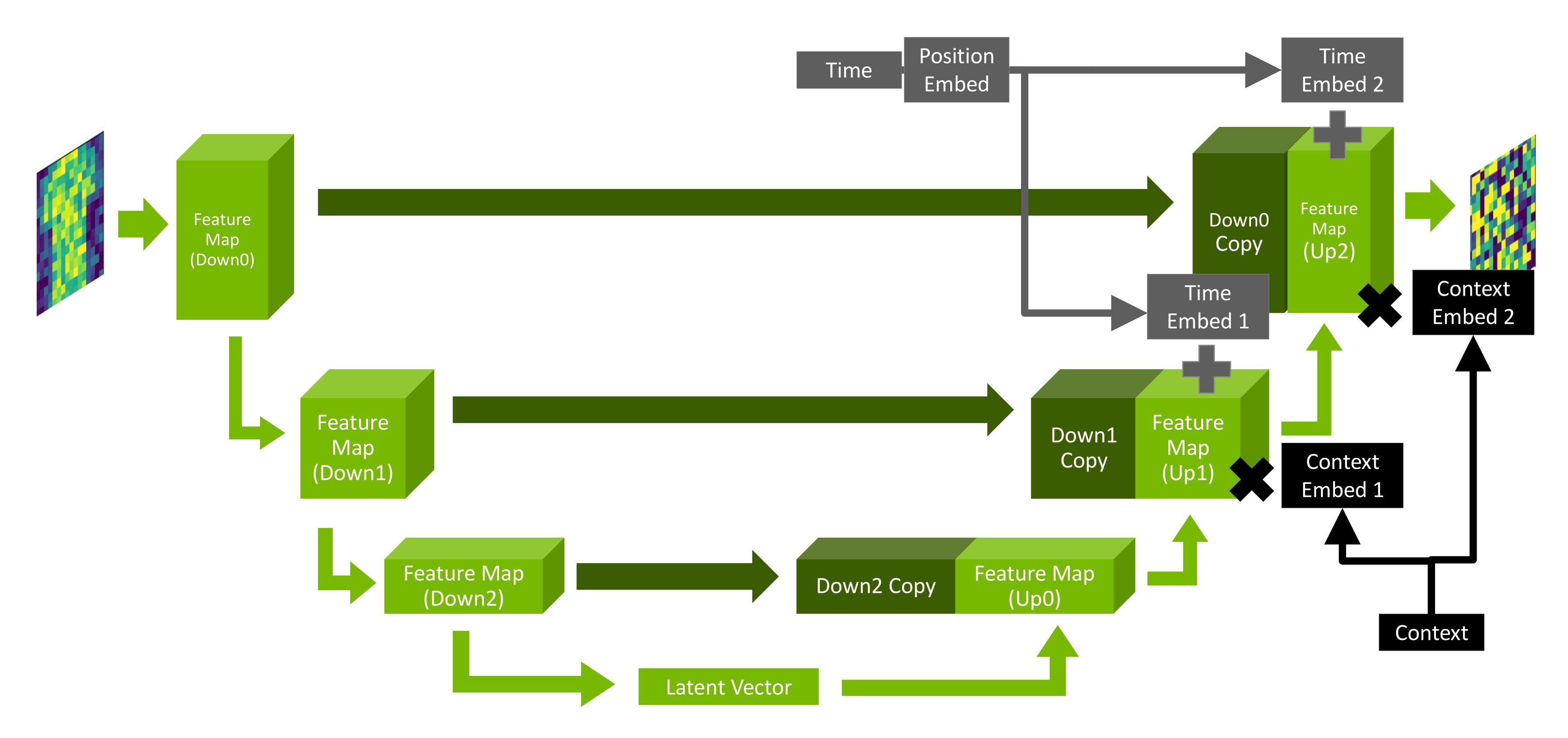
Agenda

- 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



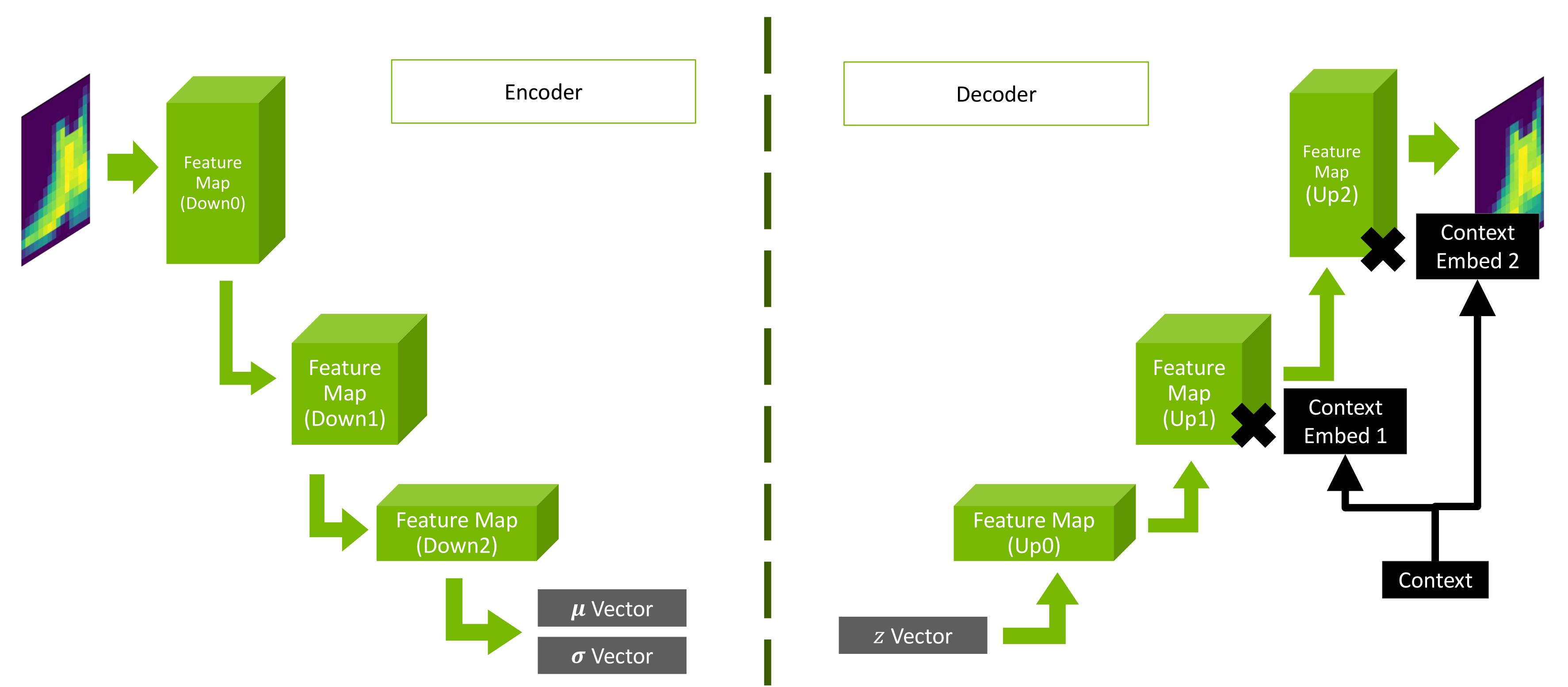


U-Net



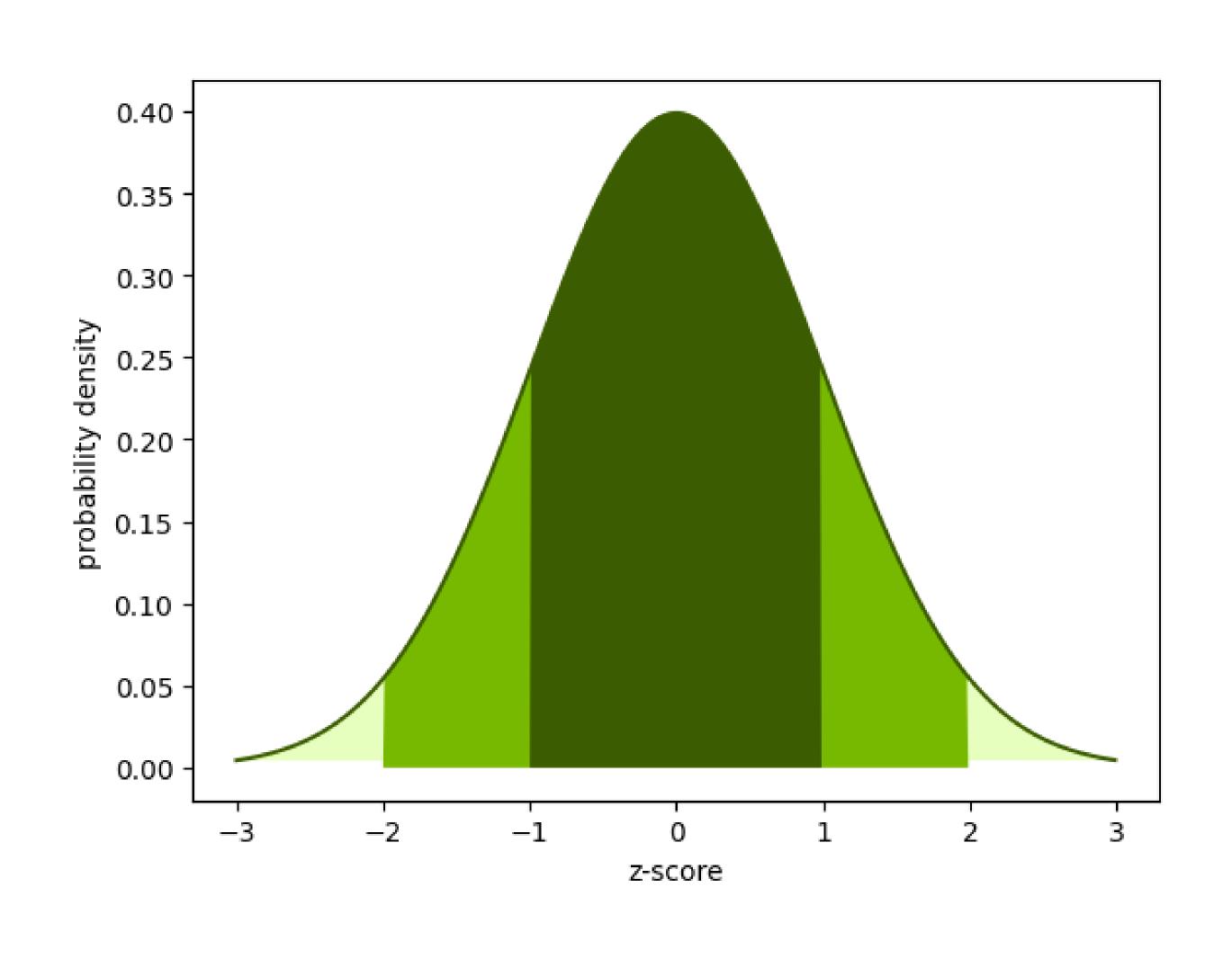


Variational Autoencoder



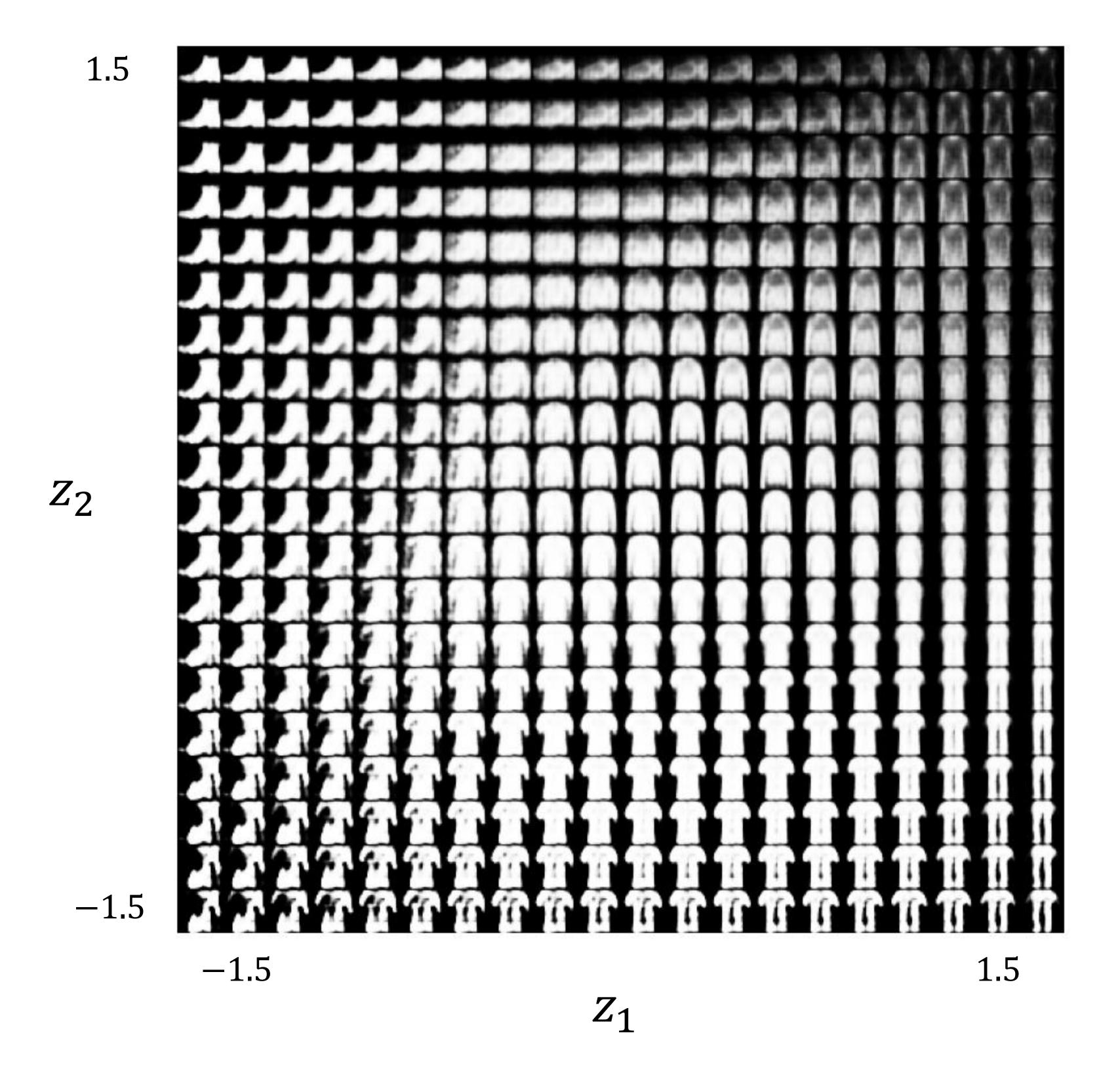


Variational Autoencoder

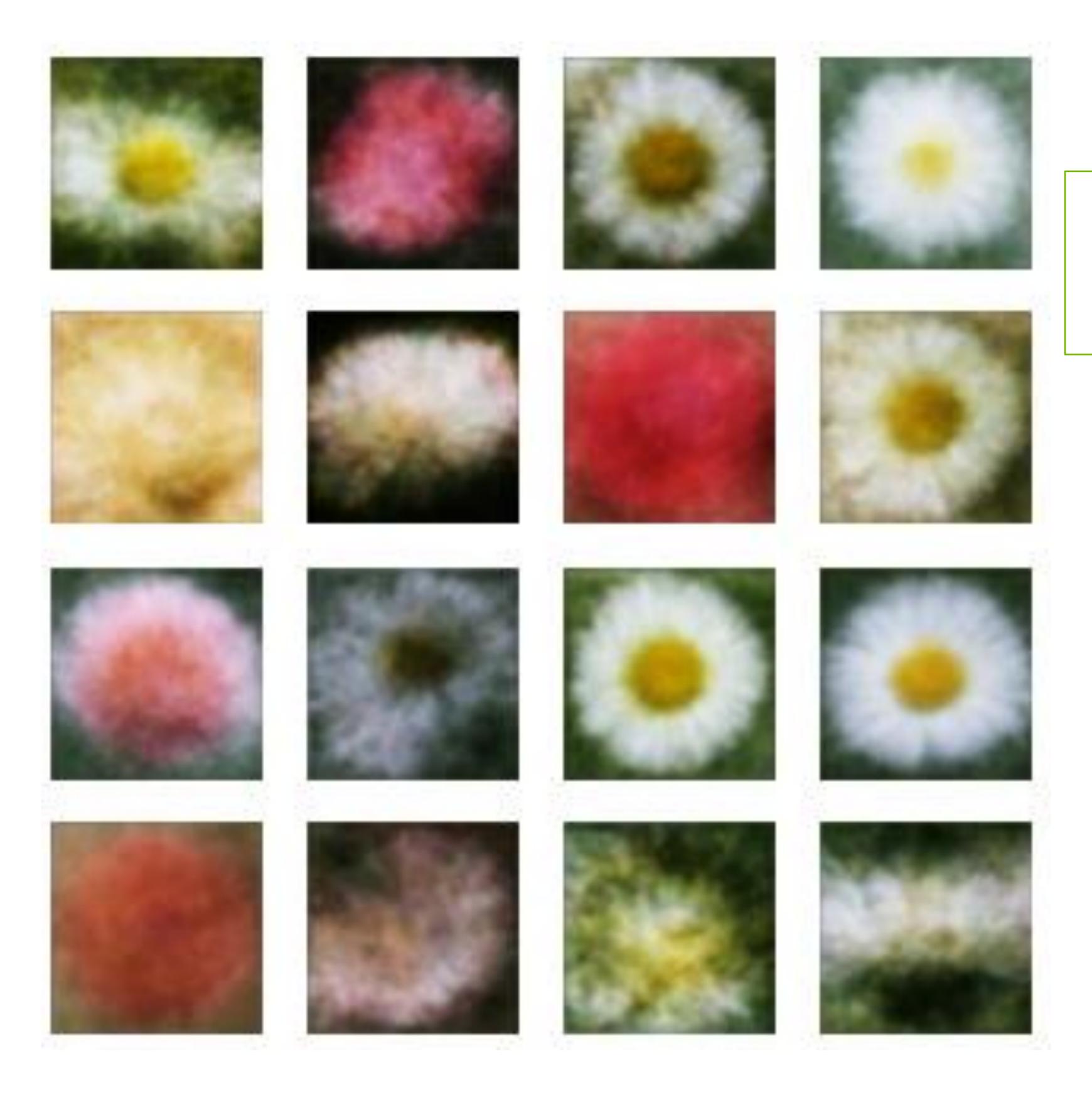


FashionMNIST

2 Latent Variables



Variational Autoencoder



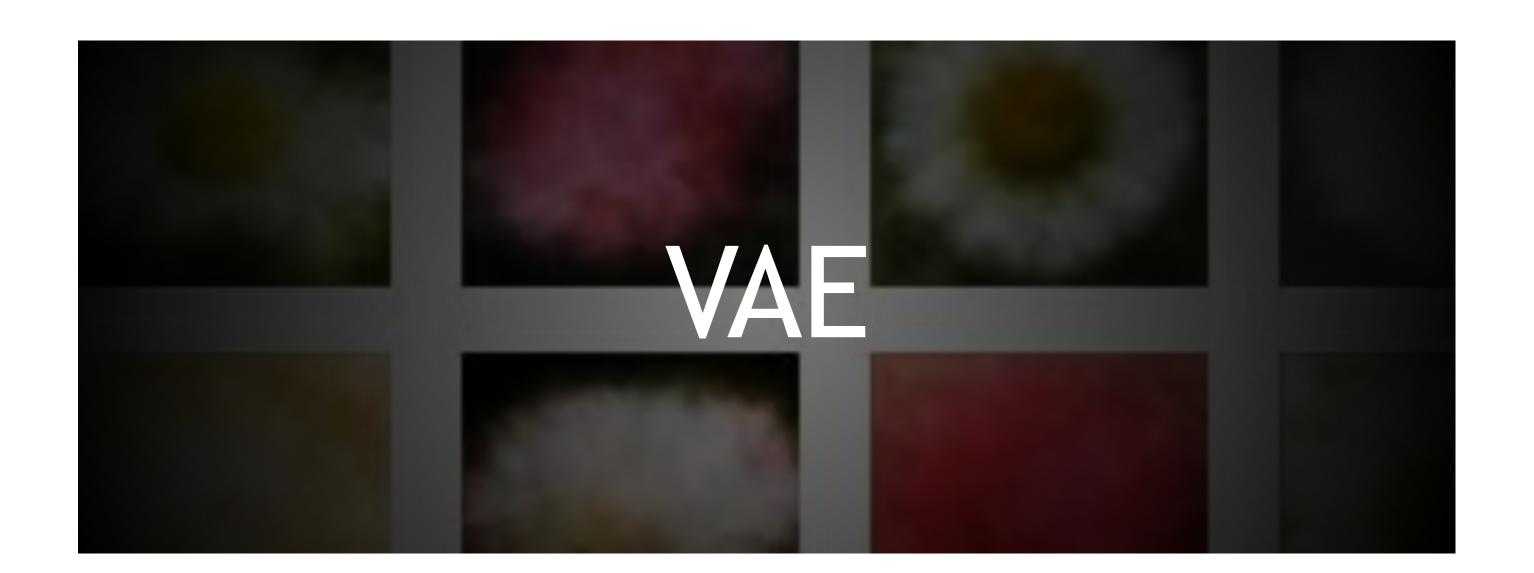
Modified TF Flowers
20 Latent Variables
16 Random Images

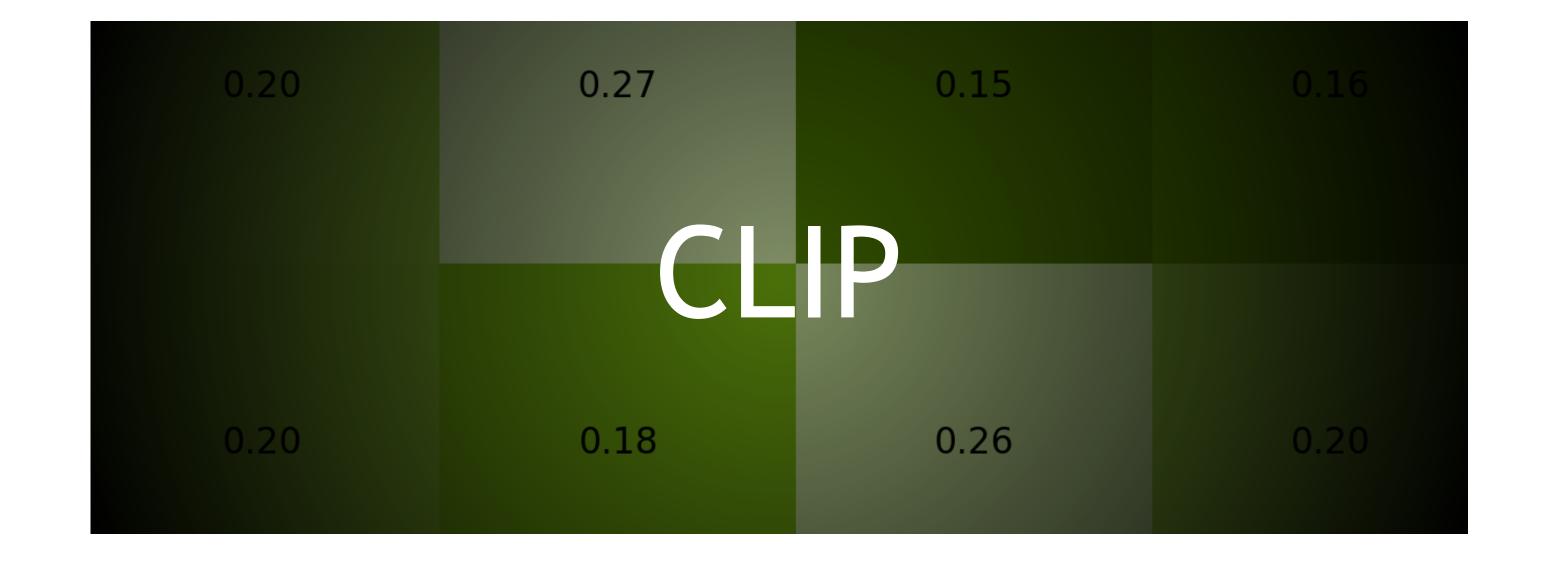


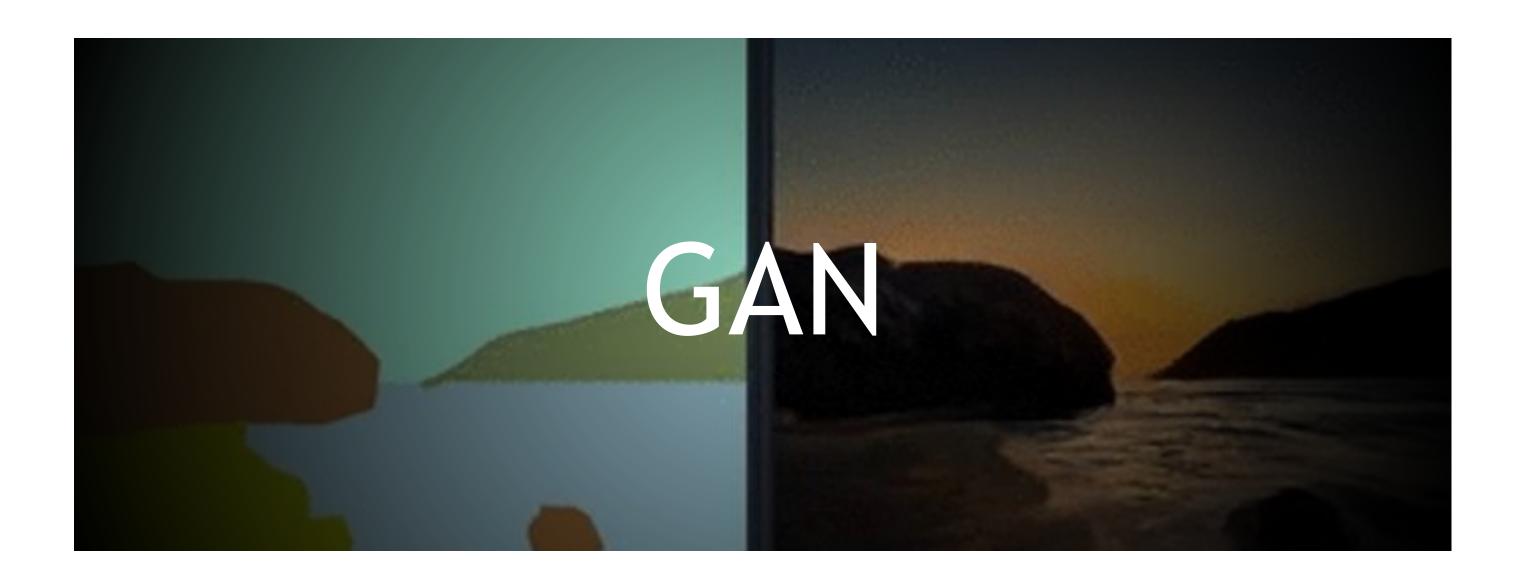
State of the Art Models

All of them are used



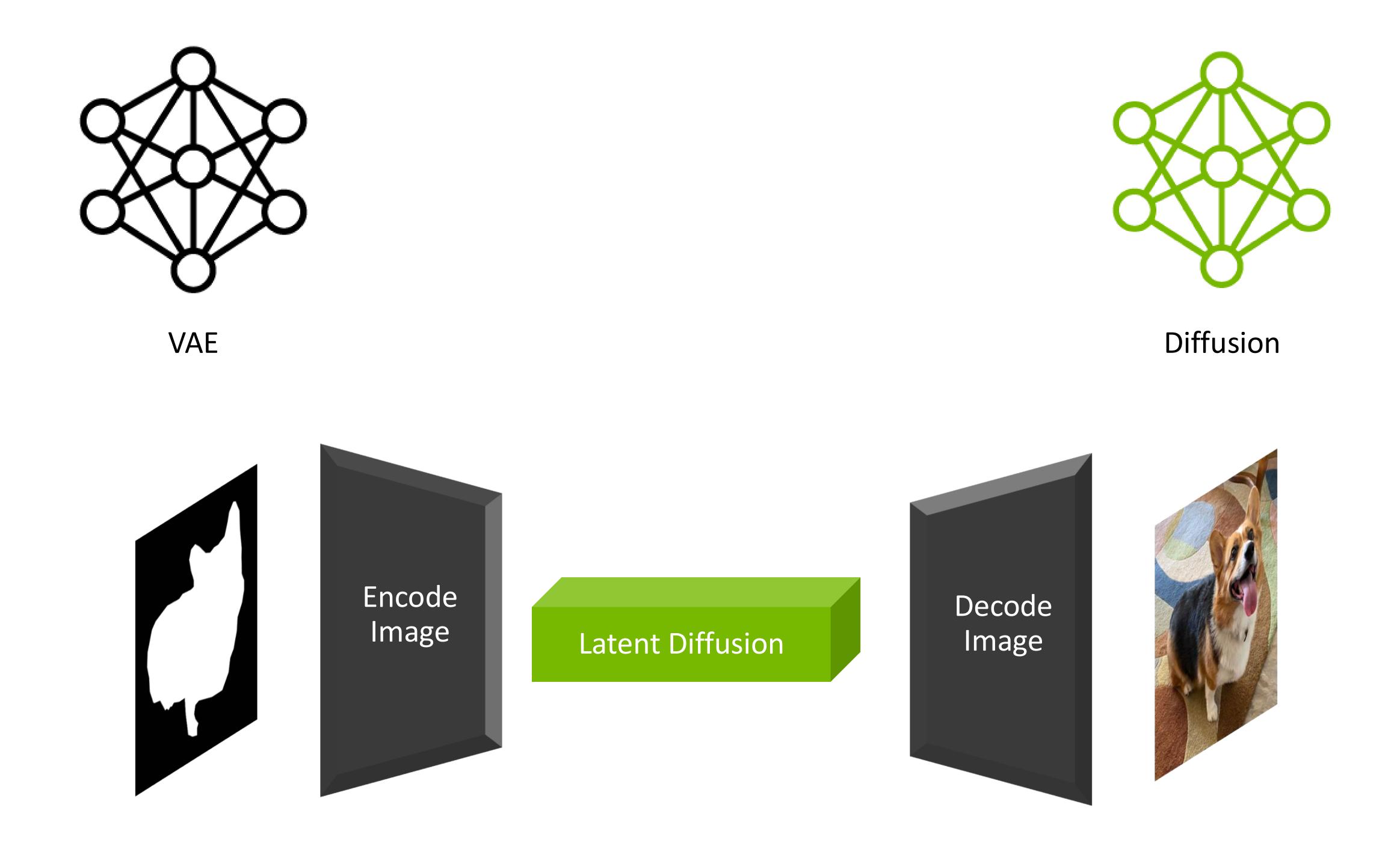








Latent Diffusion



Tiled Upsampling

Transposed Convolution Review

Kernel

Image

Output

.25	.25
.25	.25

1	0	1
0	1	0
1	0	1

.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

Output



1	0	1
0	1	0
1	0	1

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



Tiled Upsampling

Convolving with a Neural Network

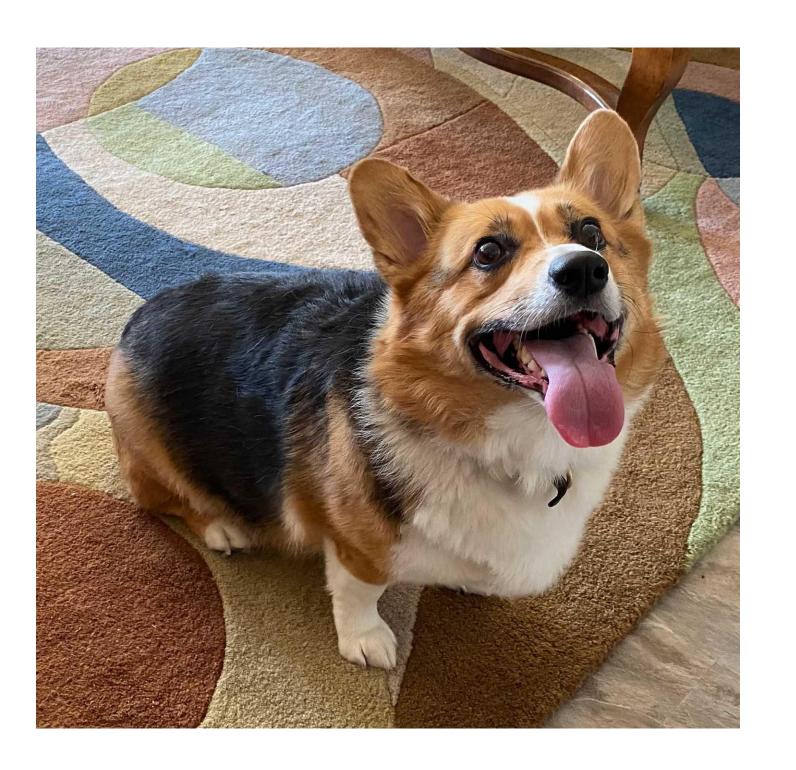
Kernel?

Image

Output







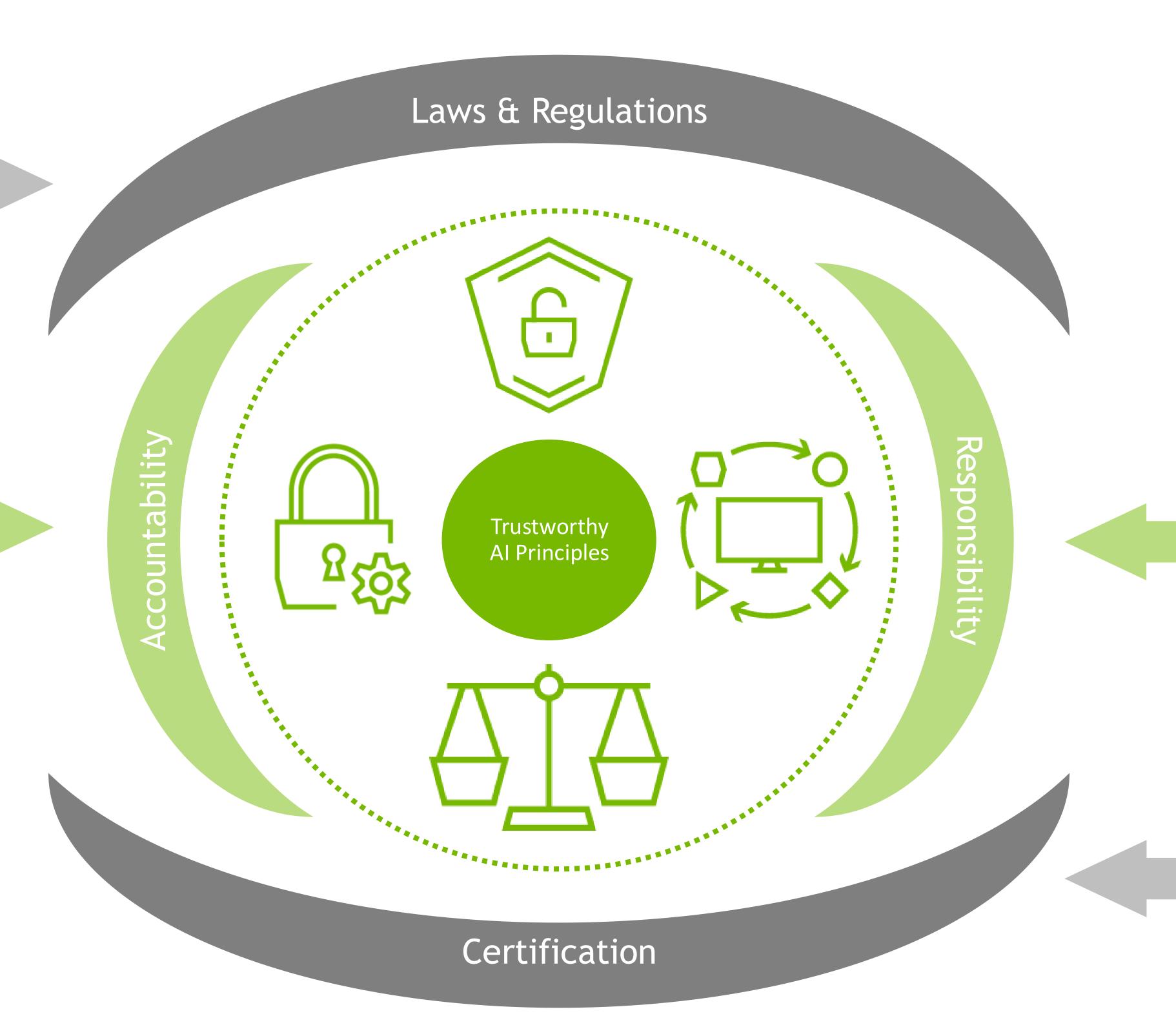




Foundations of Trustworthiness

An AI model complies with relevant laws, regulations, and standards for the region and industry where it is deployed

Accountability means being answerable for the impact of an AI on the societal system that uses it and being thoughtful about how it might be misused

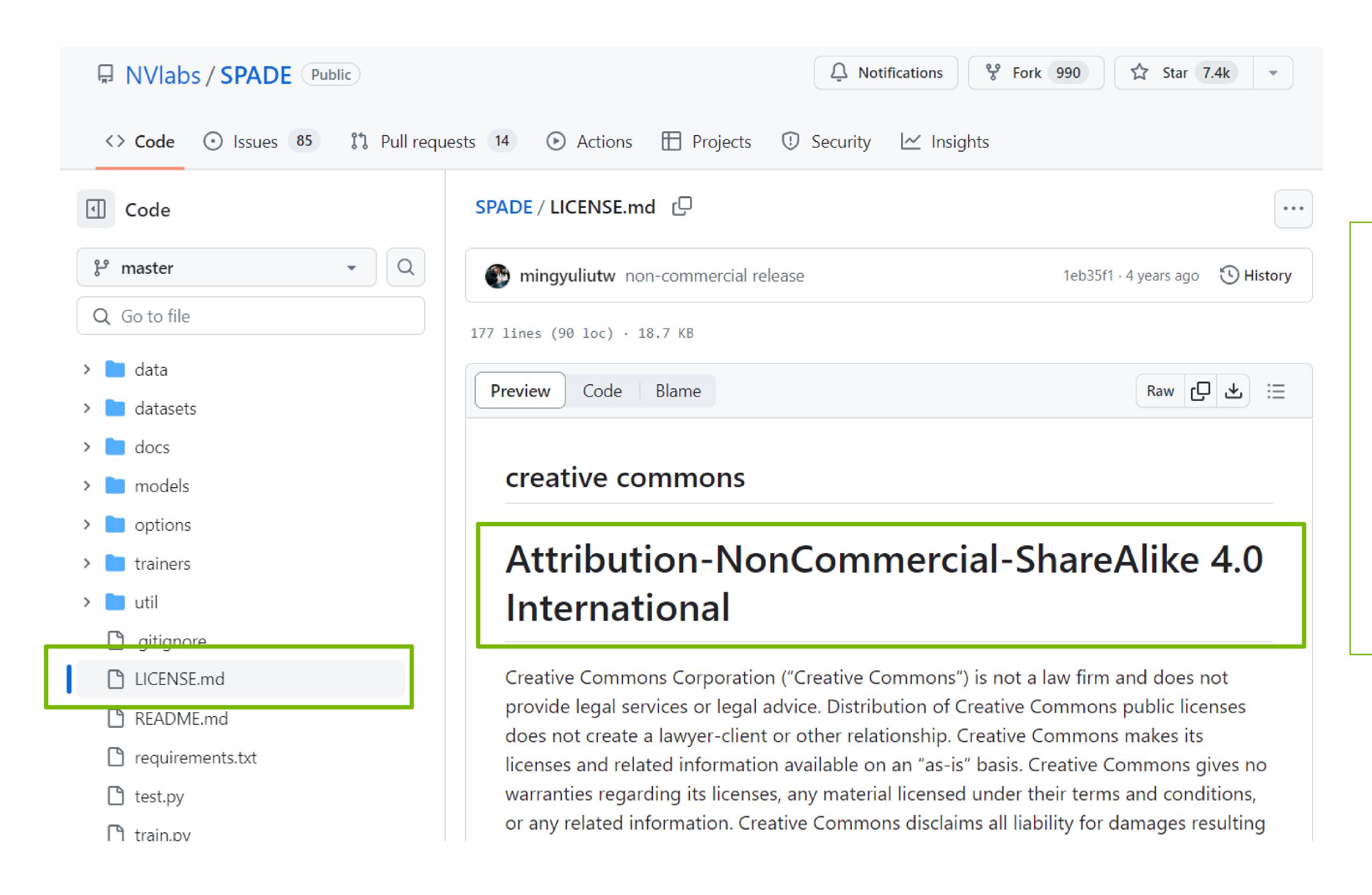


Responsibility can be legal or moral. Legal responsibility requires a violation of a law or regulation. Moral responsibility occurs from an action or an intentional failure to act.

An AI model has been certified as fit for purpose as required by the region or industry where it is deployed



Check the License

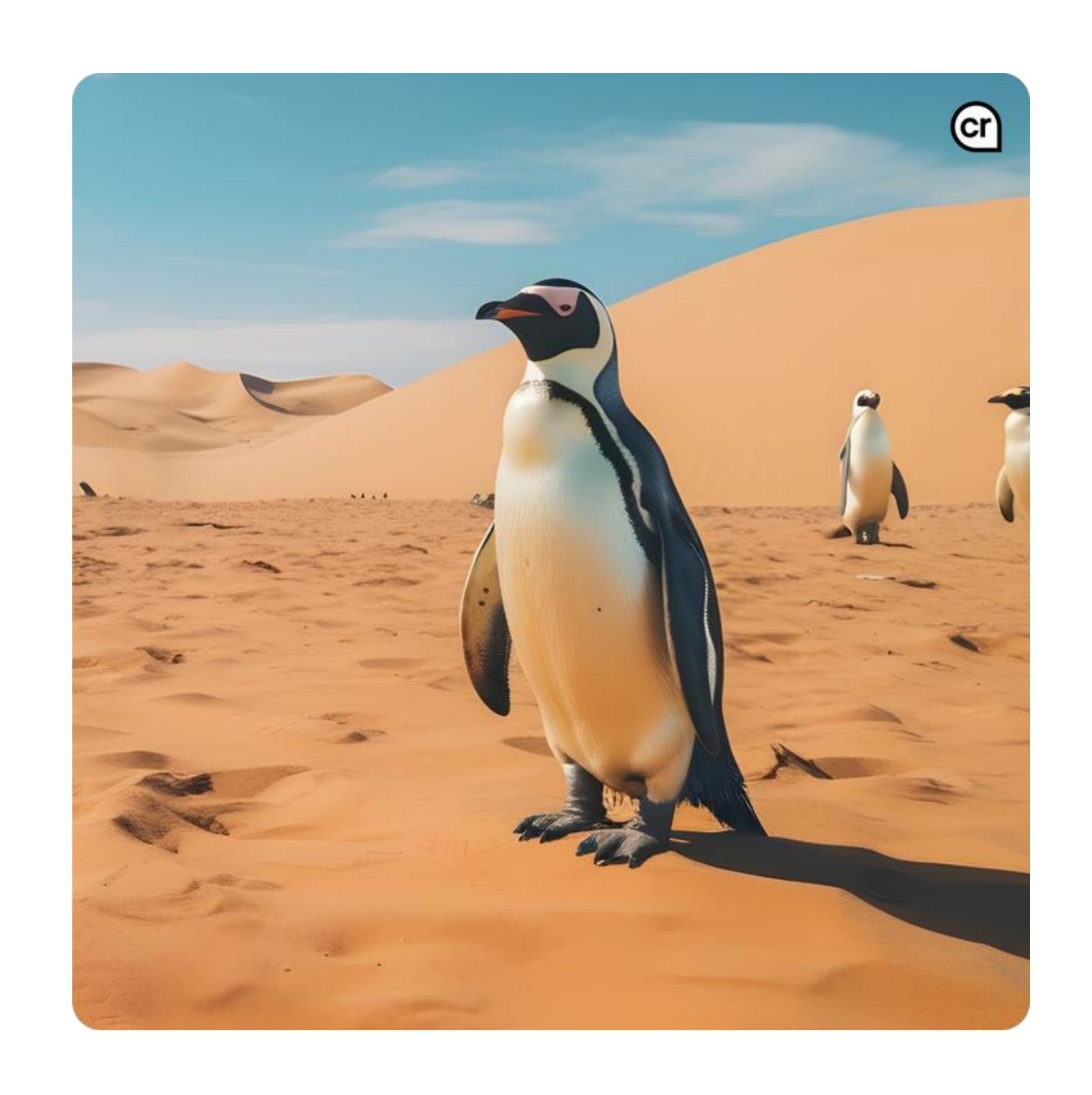


Many code repositories and datasets have a license file which describe the use limitations such as:

- Whether the asset can be used for commercial purposes
- How the authors would like to be recognized or attributed



Trustworthy Al Tools

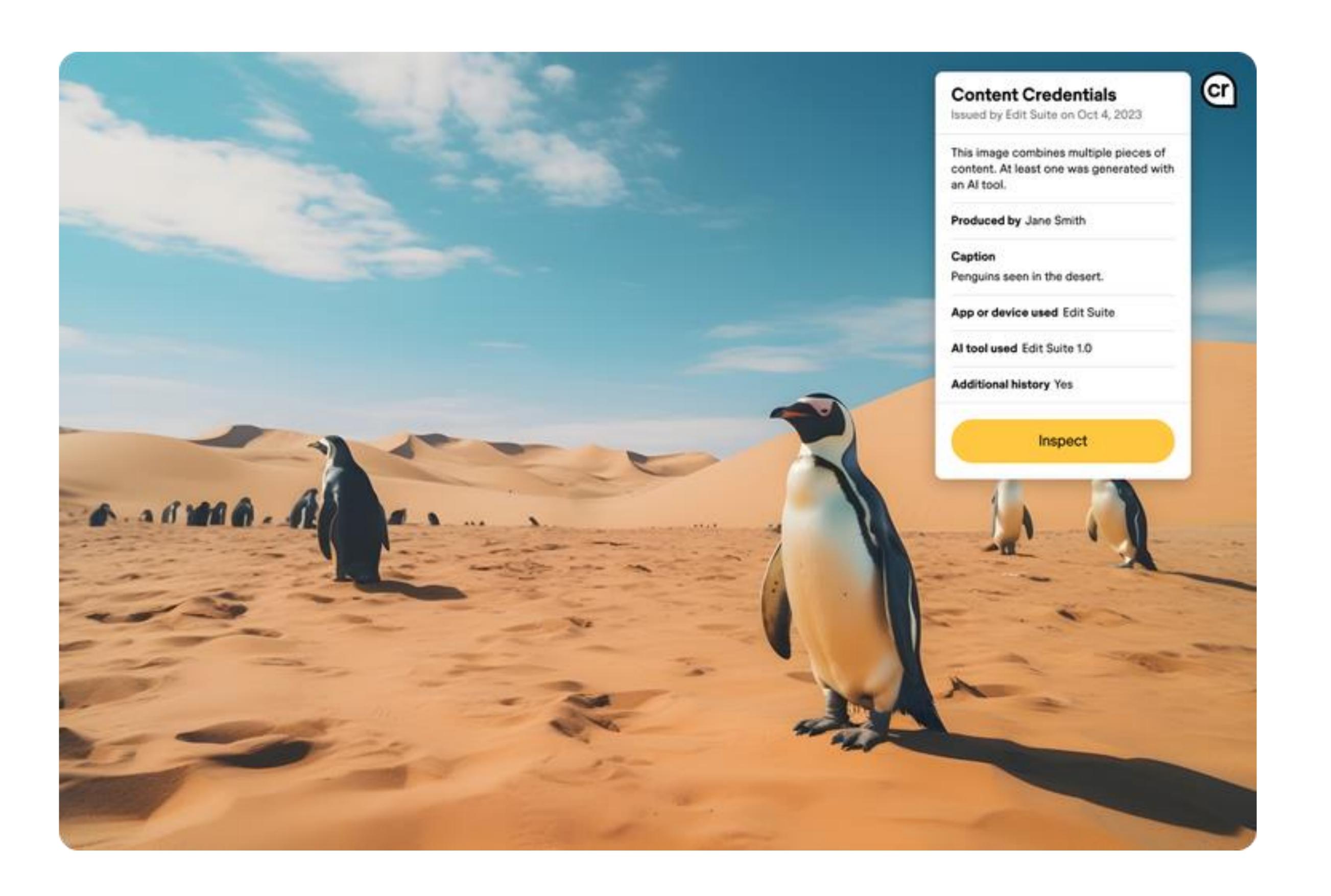




(cr) content credentials

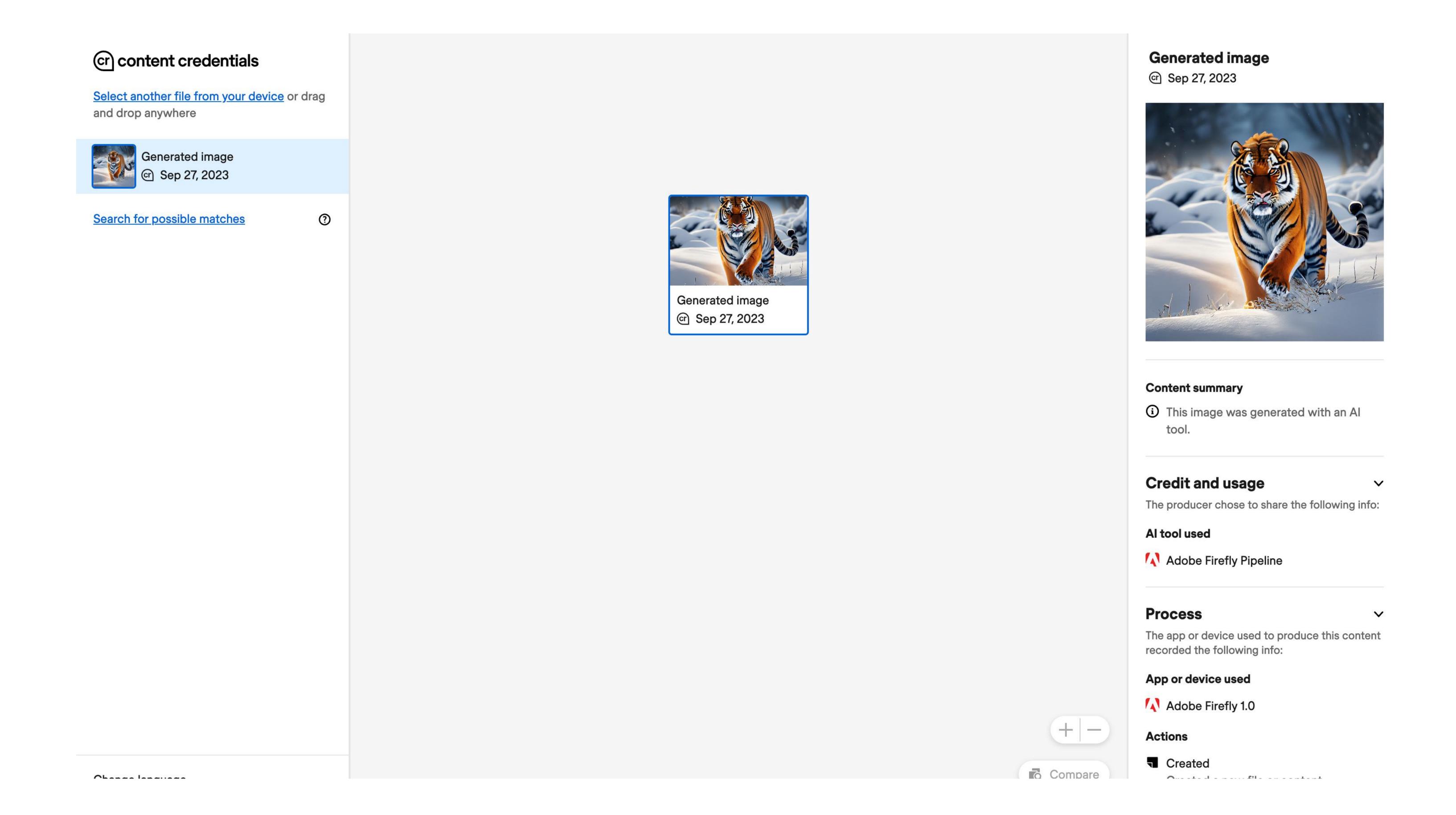


Trustworthy AI Tools





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





Inspect content to dig deeper

Drag content into Verify to inspect its Content Credentials in detail and see how it has changed over time.

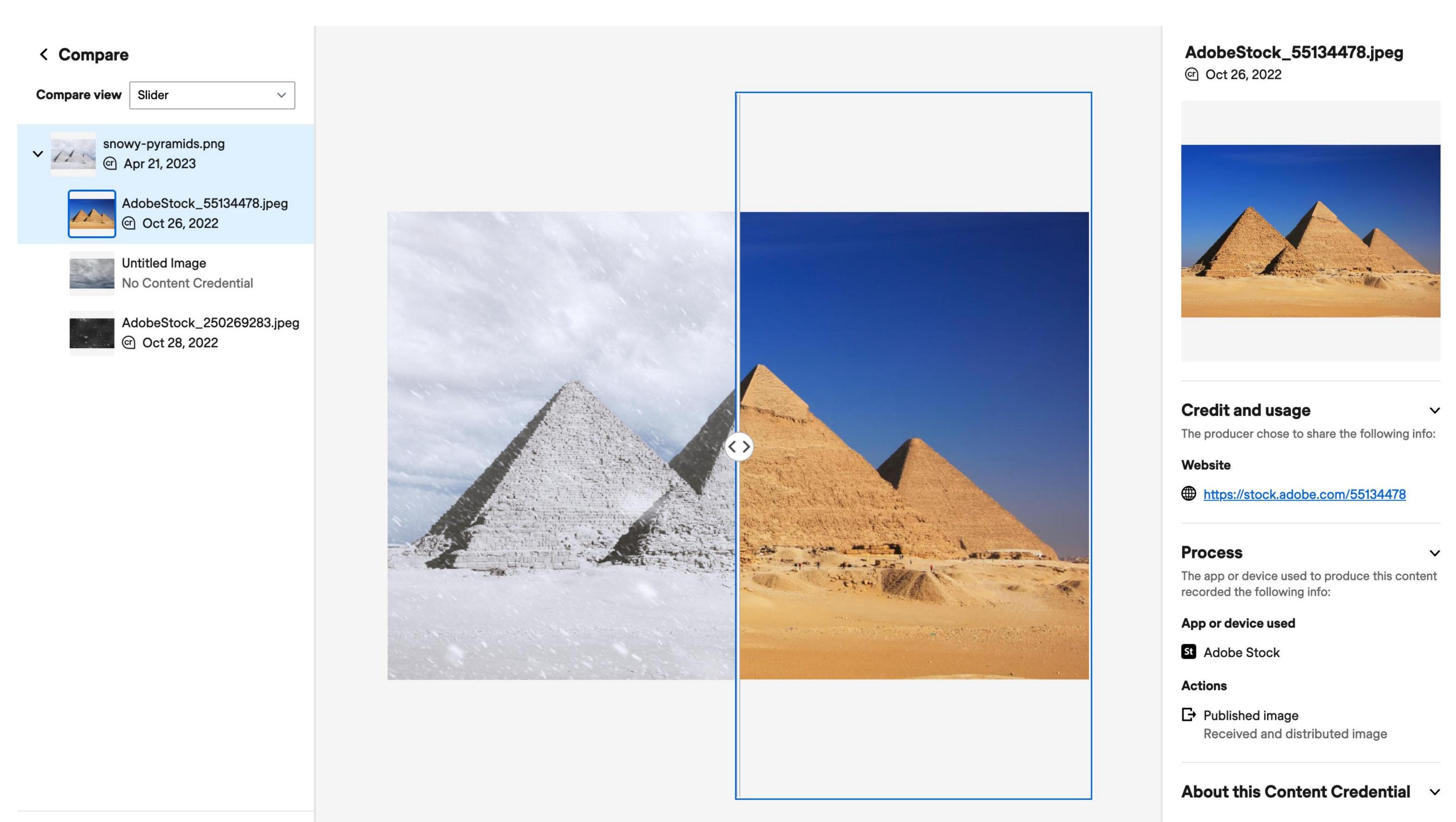
Content Credentials are still rolling out, so the content you choose to inspect may not have information to view.



Select a file from your device or drag and drop anywhere

Supported formats: AVIF, DNG, HEIC, JPEG, M4A, MP4, PNG, SVG, TIFF, WAV, WebP

The Verify inspection tool allows us see the provenance of a digital file





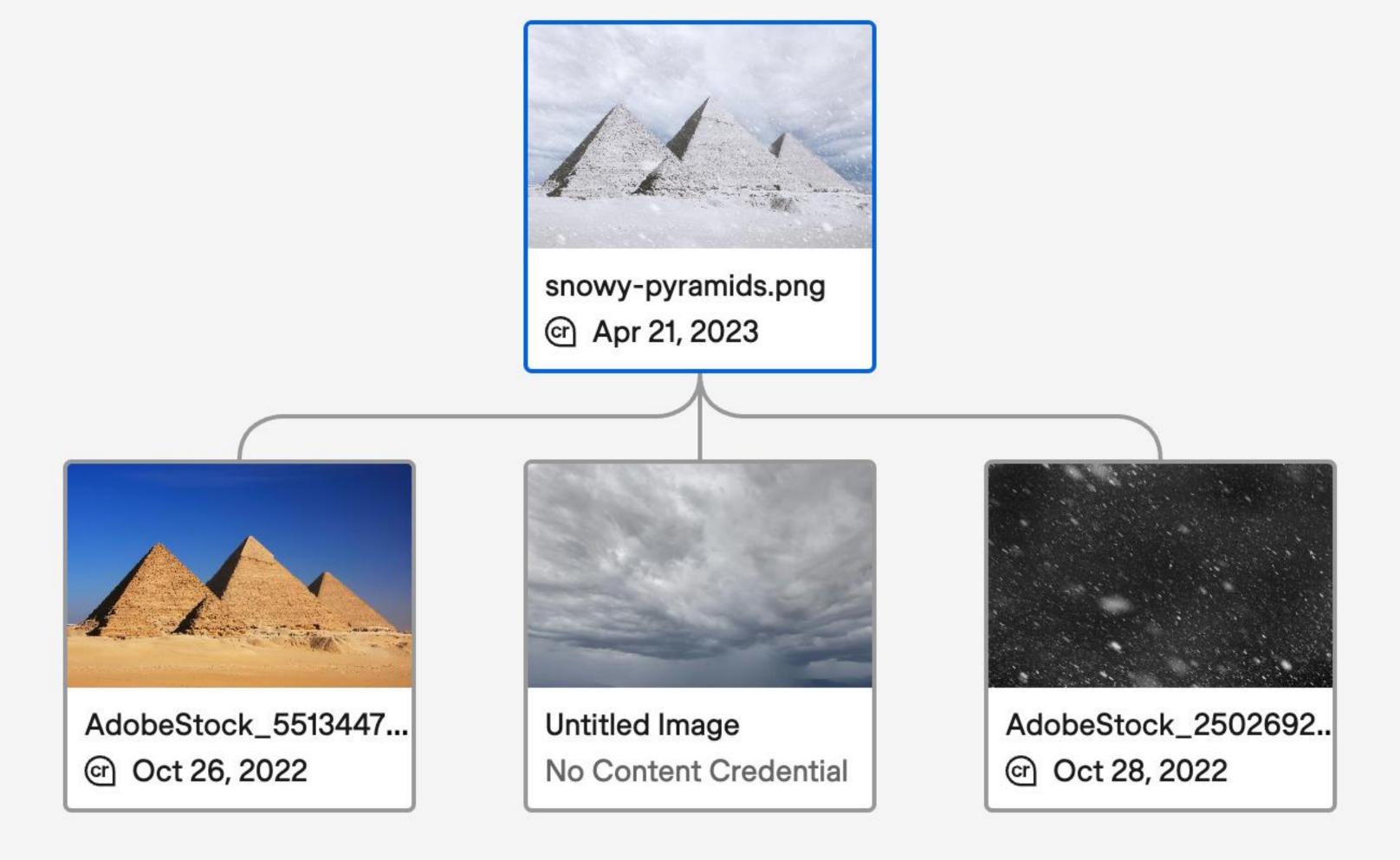


Select another file from your device or drag and drop anywhere



Search for possible matches









snowy-pyramids.png

@ Apr 21, 2023



Content summary

This image was generated with an Al tool.

Credit and usage

The producer chose to share the following info:

V

Produced by

Pia Blumenthal

Social media accounts

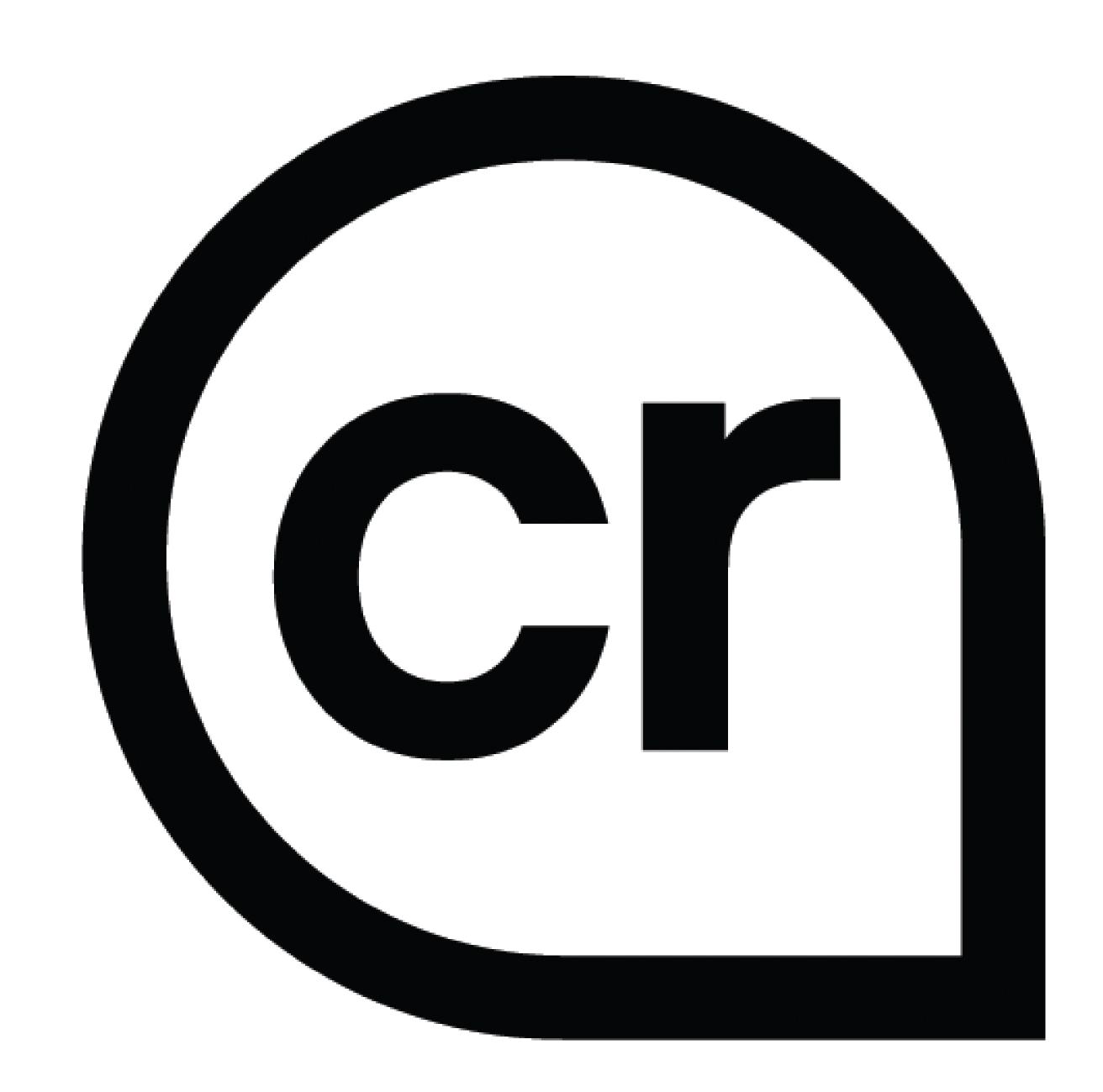
Pia Blumenthal
Behance



Al tool used

undefined

The Content Credentials pin will appear next to content online, indicating that provenance information is present.









Adobe Firefly

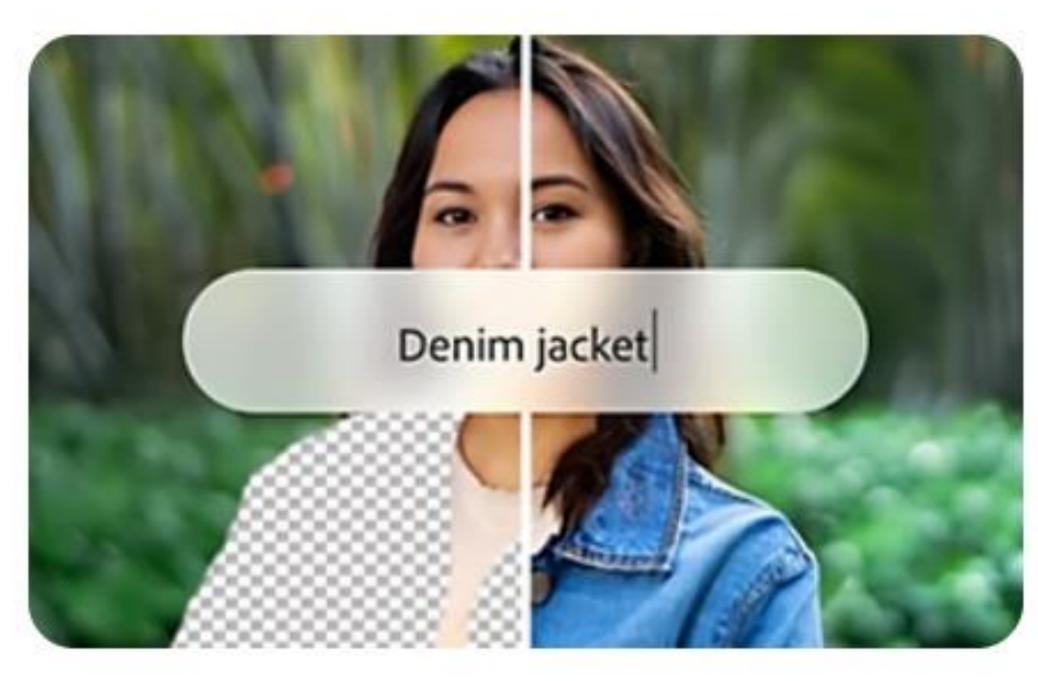
https://firefly.adobe.com/



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.

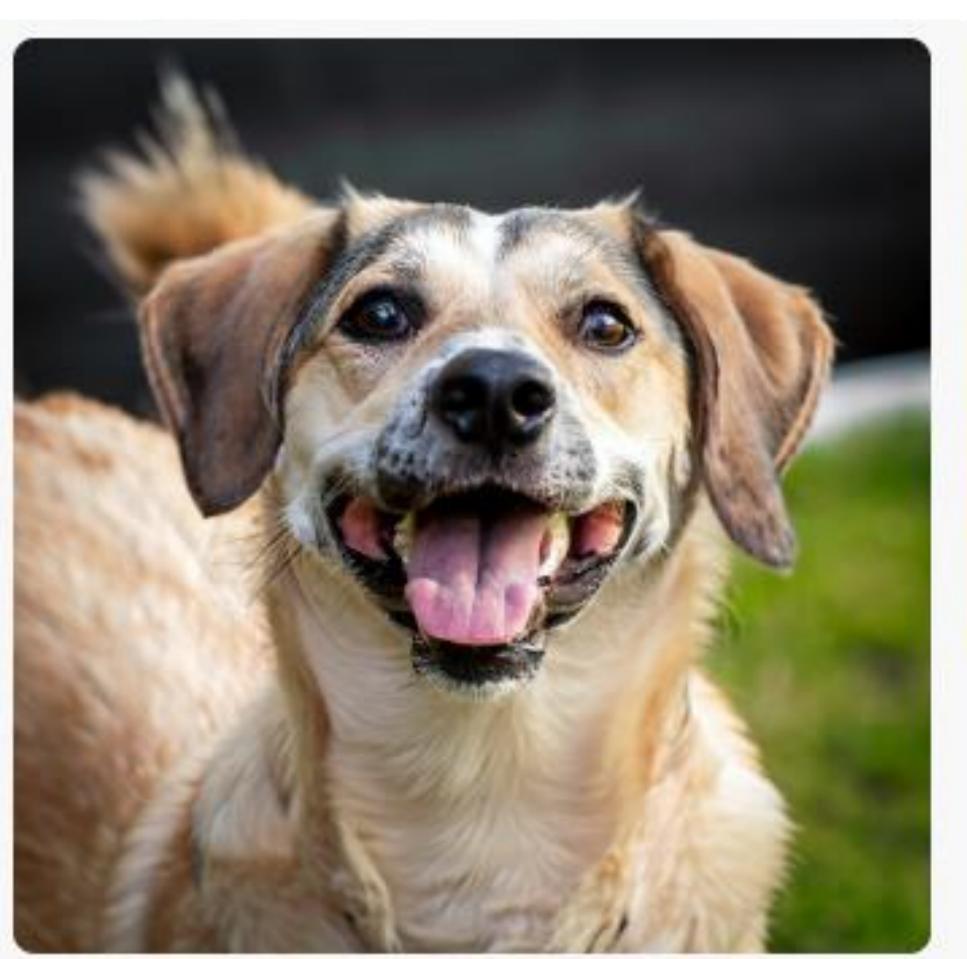
Create with Firefly



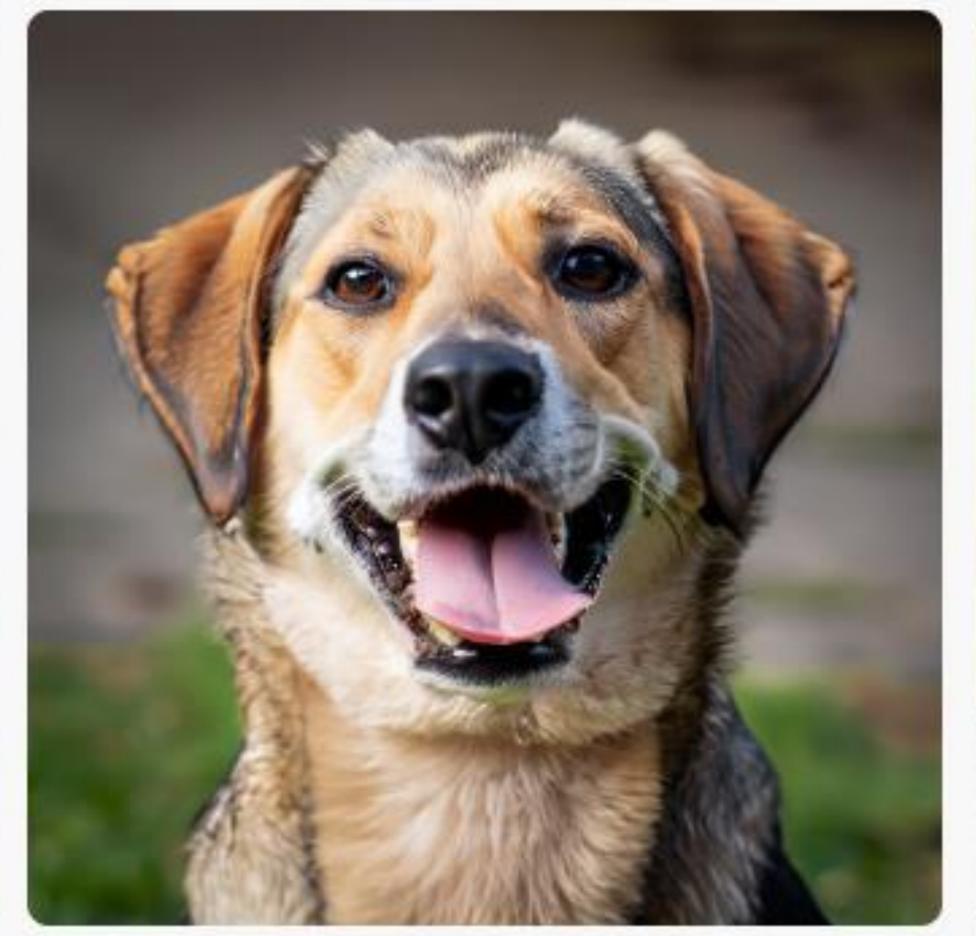
Prompt Engineering

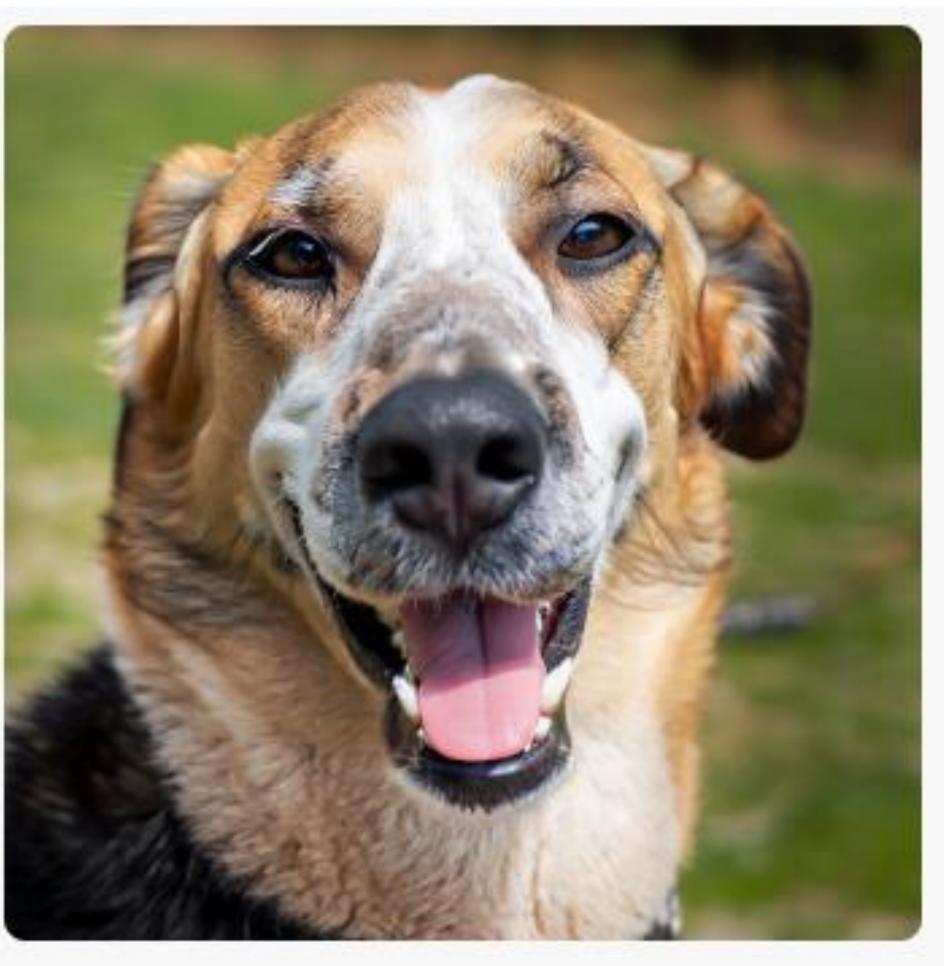
State-of-the-art Models

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"







