WOMEN'S CLOTHING E_COMMERCE WITH GANS

Exploration about Text to Image Synthesis using Generative Adversarial Networks

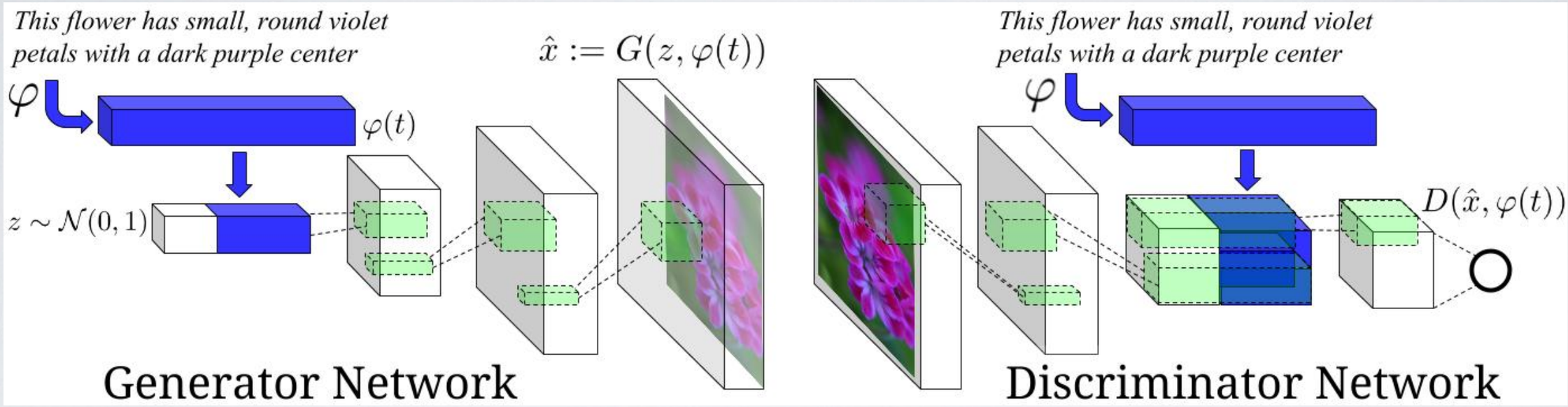
- Univariate Analysis
- Multivariate Analysis
- Text feature extraction
- Sentiment Analysis
- Supervised Learning
- *Can we find a more intuitive way to show the value of data?*

[Pink/Blue] [Vintage] [Flirty] [Soft] [Summer] [Dress]

It would be nice if we could generate images based on some words.

Generative Adversarial Text to Image Synthesis

(Scott Reed ICML 2016)



- Generator Network: Text Encoding(Embedding) → Relu+N(0,1) → Convolution → Generator Pictures
- Discriminator Network: Convolution → Feature map+Embedding → Convolution → Reasonable and Match
- Style transfer: Picture → Random Vector → Vector+Embedding → Style picture

Generative Adversarial Text to Image Synthesis

(Scott Reed ICML 2016)

This bird has a white breast and belly and a small bill.

Small, roundish bird with off white breast and belly, light brown crown, brown and black coloured wings.

GAN-INT:Learn to fill in gaps on the data manifold in between training points by interpolated text embeddings.

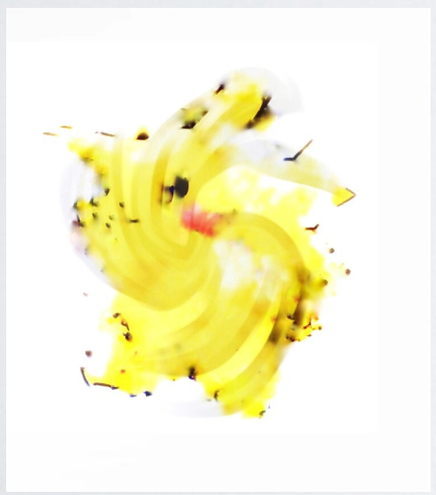
GREAT!
WHAT WE NEED IS ONLY A GOOD
DATA SET!
GREAT!

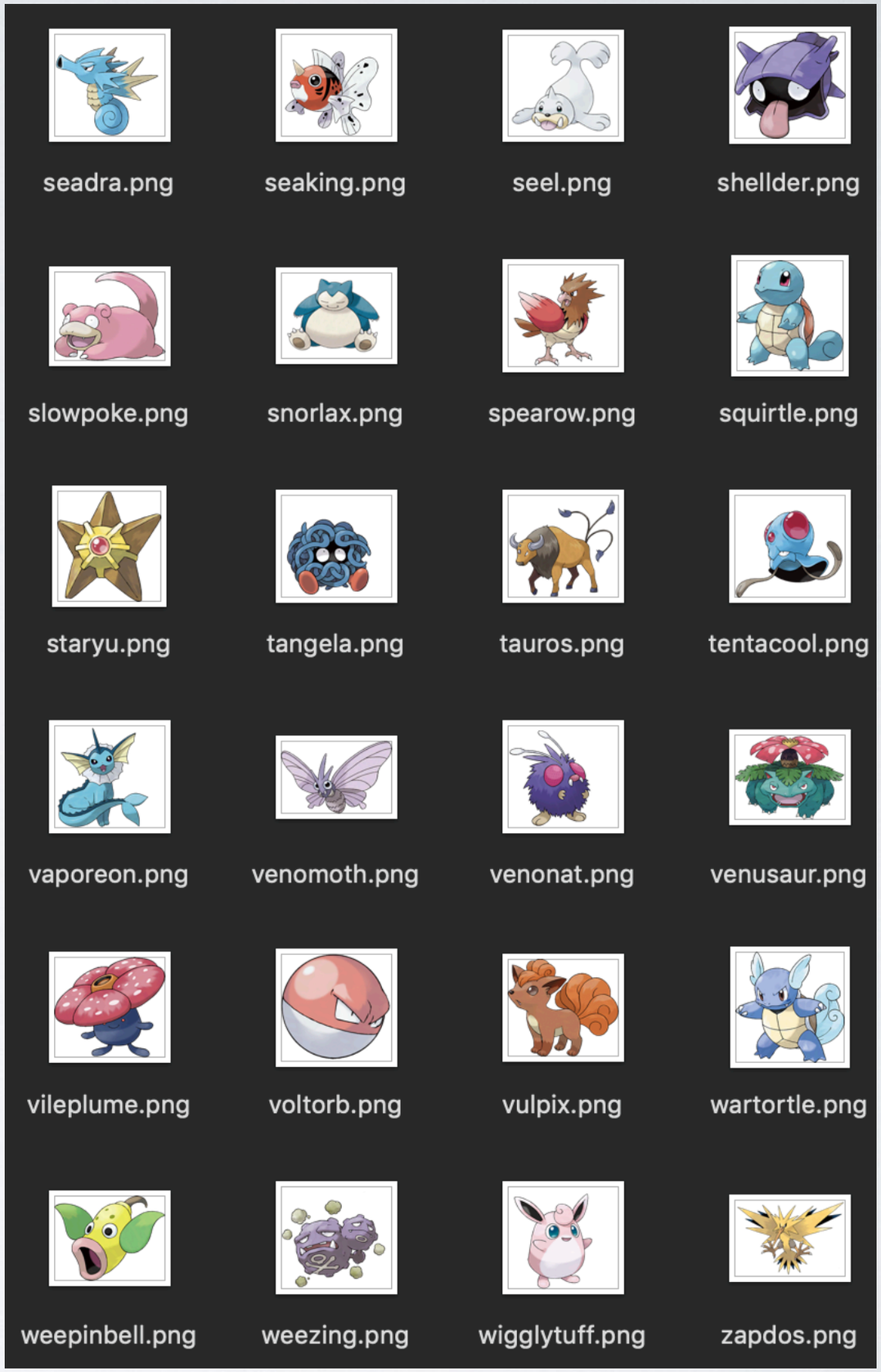
Example: Pokémon Database

- Bulbasaur is a small, quadruped Pokémon that has turquoise skin with darker teal patches. It has red eyes with white pupils and scleras. It also has pointed, ear-like structures on top of its head. Its snout is short and blunt, and it has a wide mouth. A pair of small, pointed teeth are visible in the upper jaw when its mouth is open. Each of its thick legs ends with three sharp claws. On its back is a green plant bulb, which is grown from a seed planted there at birth.

Experiment: Pikachu

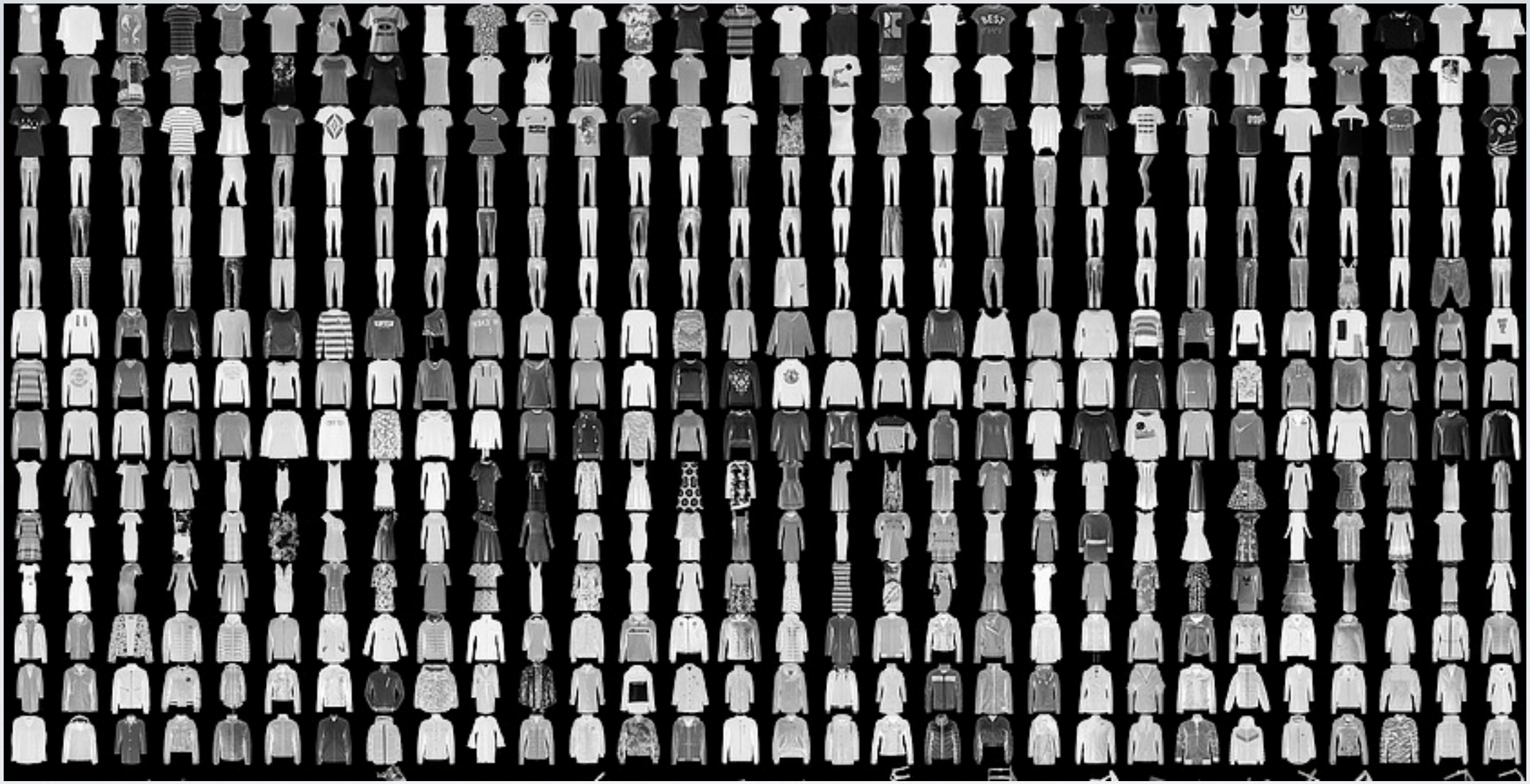
- Pikachu is a short, chubby rodent Pokémon. It is covered in yellow fur with two horizontal brown stripes on its back. It has a small mouth, long, pointed ears with black tips, brown eyes…





EMM . . .

WE STILL NEED A GOOD DATA SET😢



FASHION-MNIST

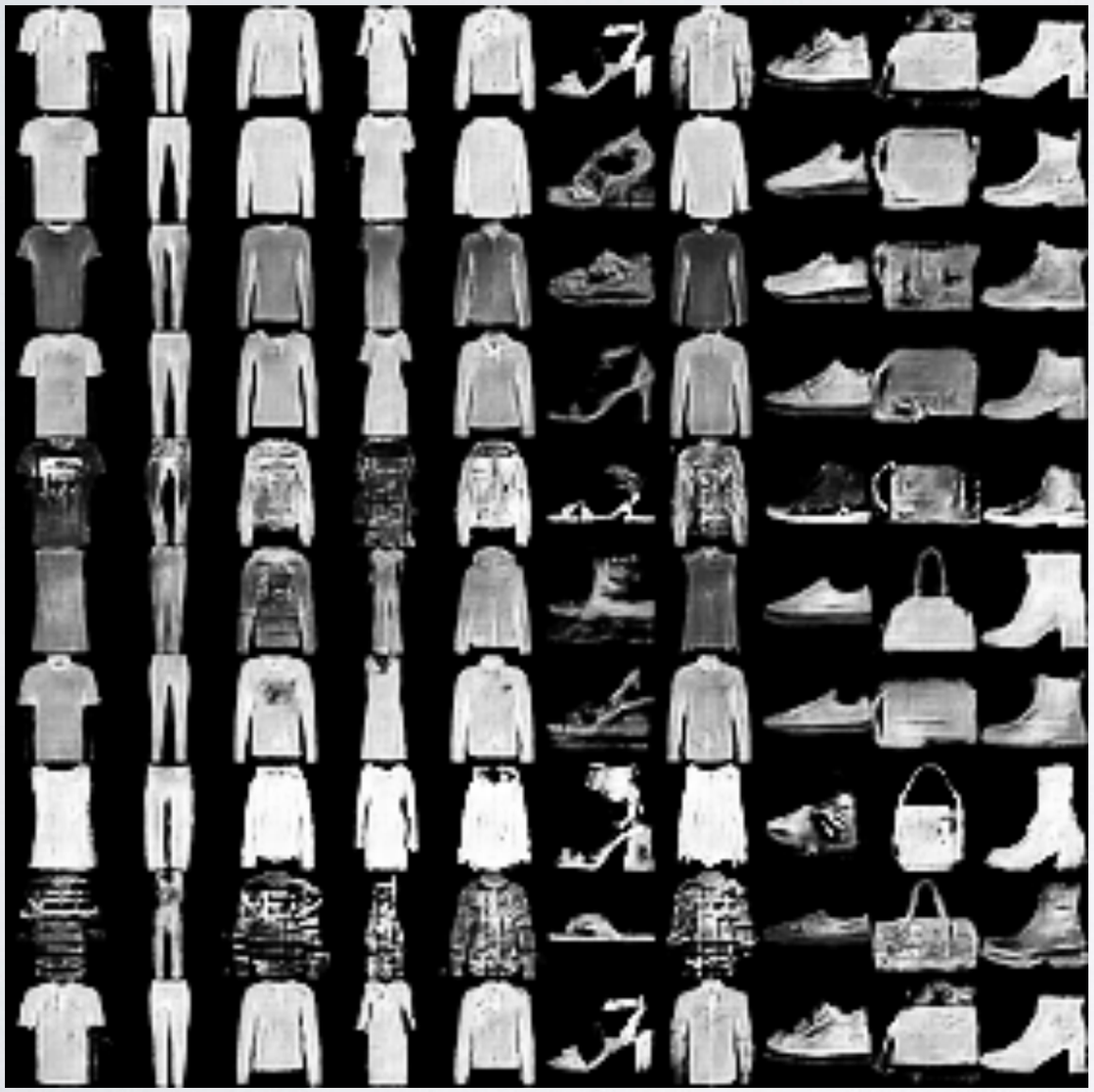
Fashion-MNIST is a dataset consisting of a training set of 60,000 examples and a test set of 10,000 examples. Each example is a 28x28 grayscale image, associated with a label from 10 classes.

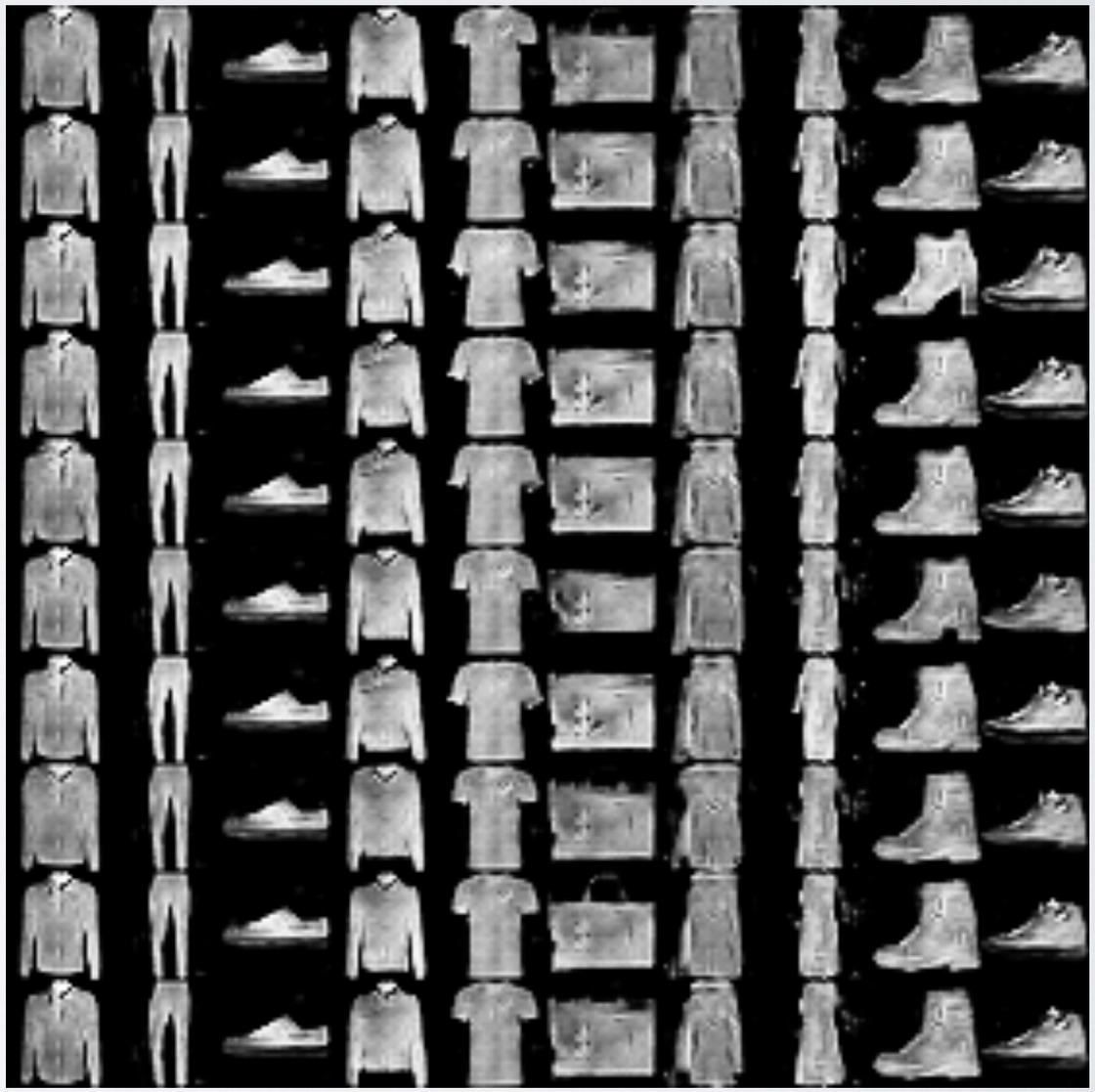
- ***0 T-shirt/top***
- ***1 Trouser***
- ***2 Pullover***
- ***3 Dress***
- ***4 Coat***
- ***5 Sandal***
- ***6 Shirt***
- ***7 Sneaker***
- ***8 Bag***
- ***9 Ankle boot***

Fashion-MNIST serves as a direct drop-in replacement for the original MNIST dataset for benchmarking machine learning algorithms. It shares the same image size and structure of training and testing splits.

InfoGAN: Interpretable Representation Learning by Information Maximizing Generative Adversarial Nets

(Chen NIPS 2016)

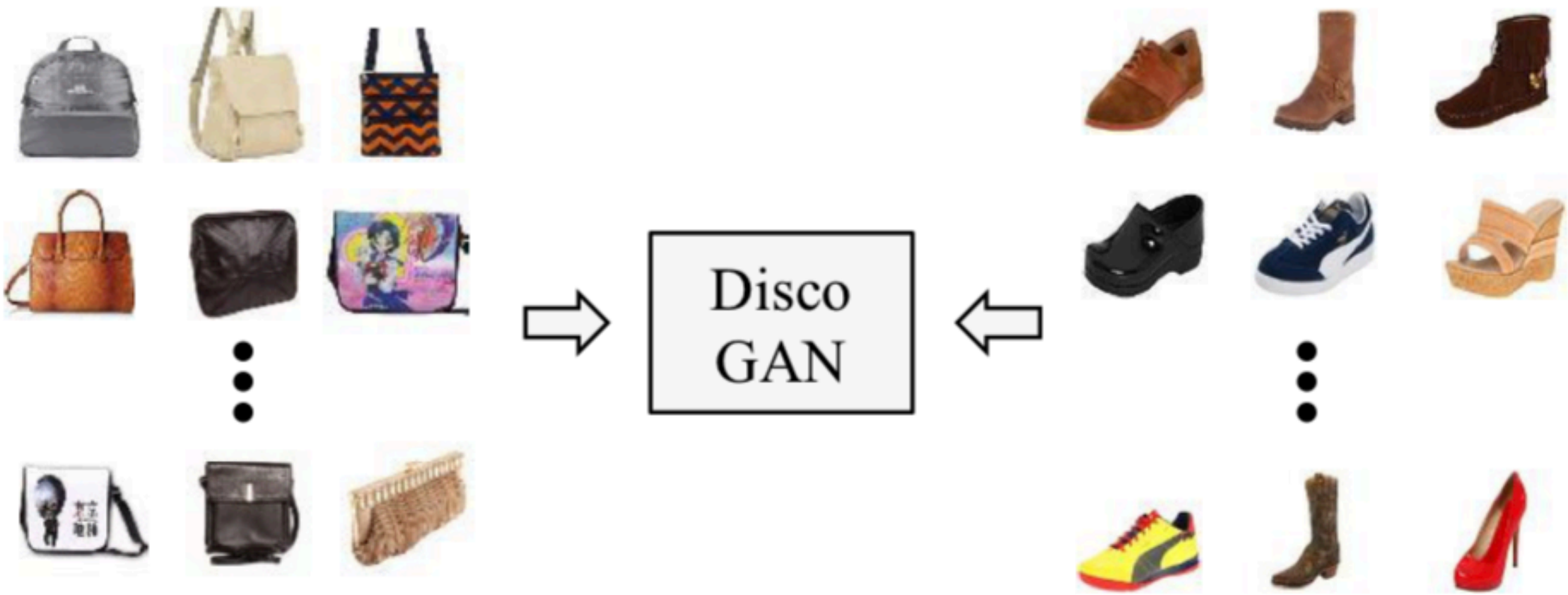




More: Discover Relations Between Different Domains

Learning to Discover Cross-Domain Relations with Generative Adversarial Networks

(Kim 2017)



(a) Learning cross-domain relations **without any extra label**

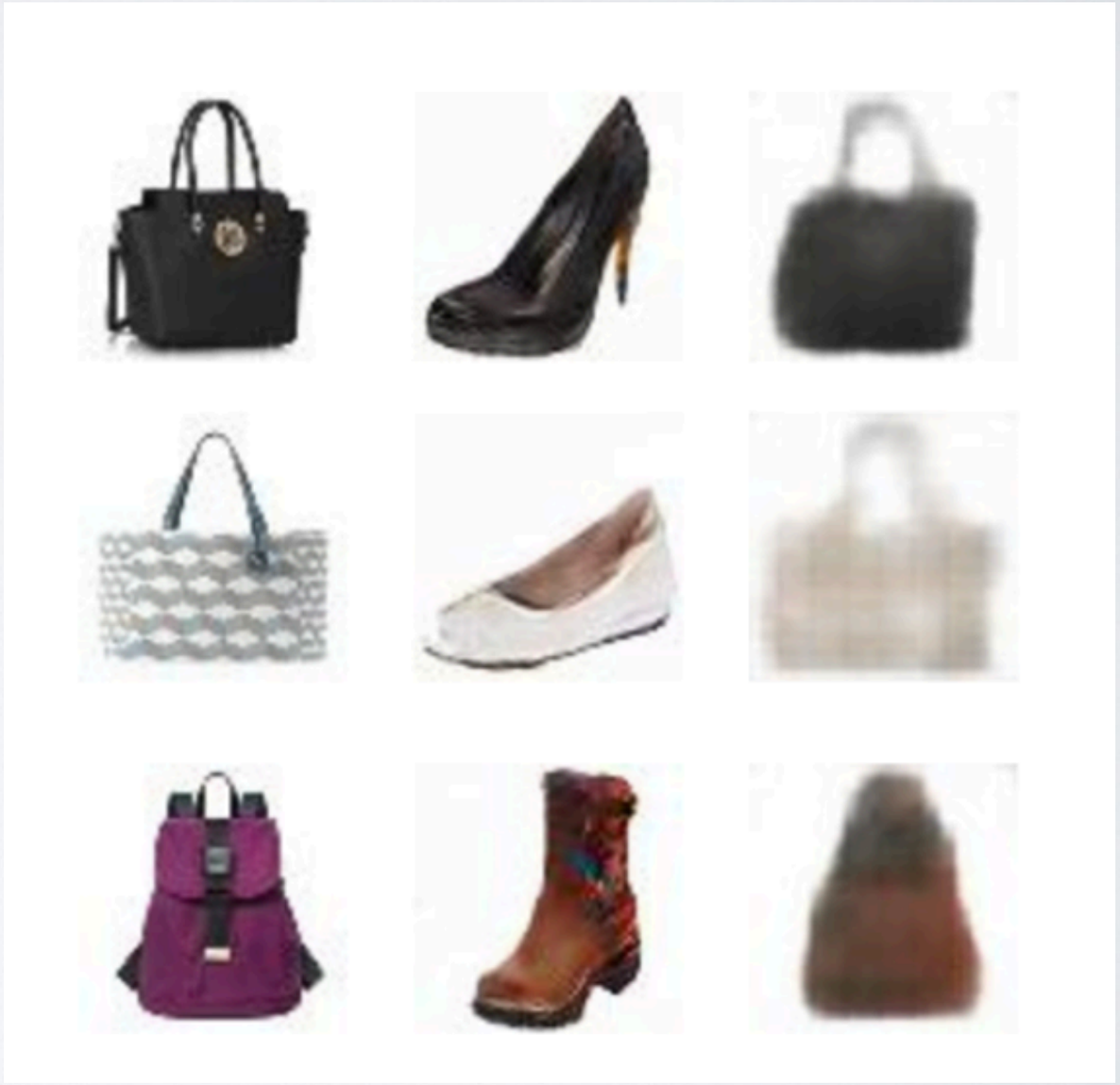
- Using the discovered relations transfers style from one domain to another while preserving key attributes

Experiment: Handbags to Shoes

- Two domains that are visually very different, where shared features are not explicit even to humans

- Discover the fashion style as a related feature between the two domains

- Not only similar colors and patterns, but also similar level of fashion formality as the input fashion item.



Thank you~