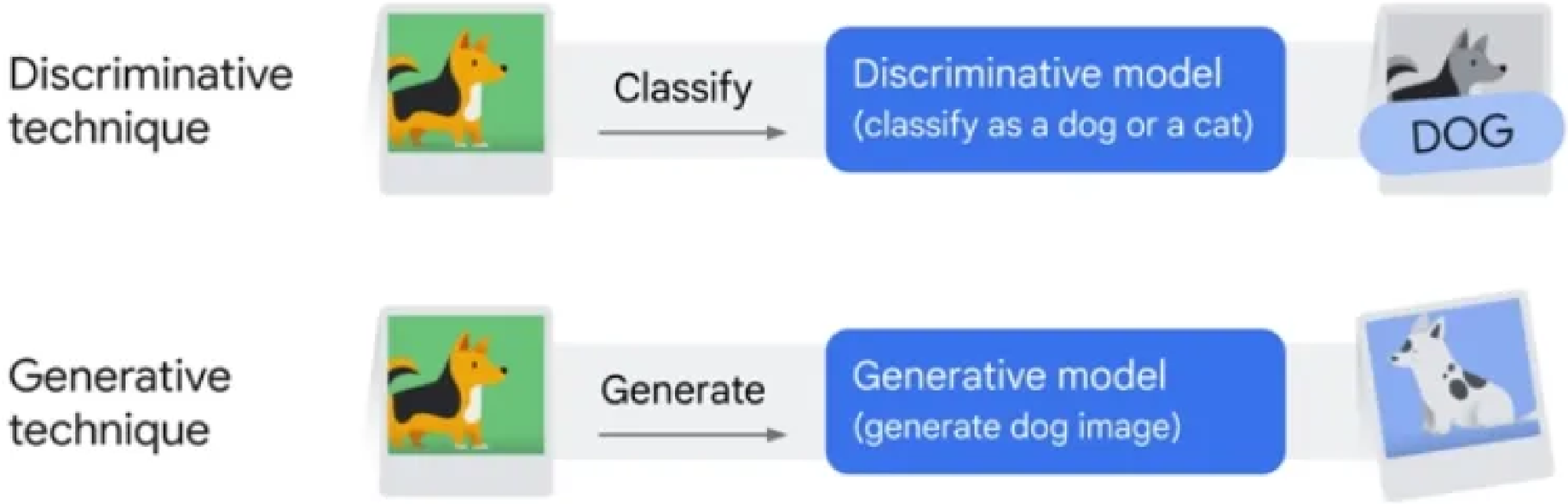
Generative AI

HOW TO USE IT FOR IMAGE TO VIDEO PROBLEM

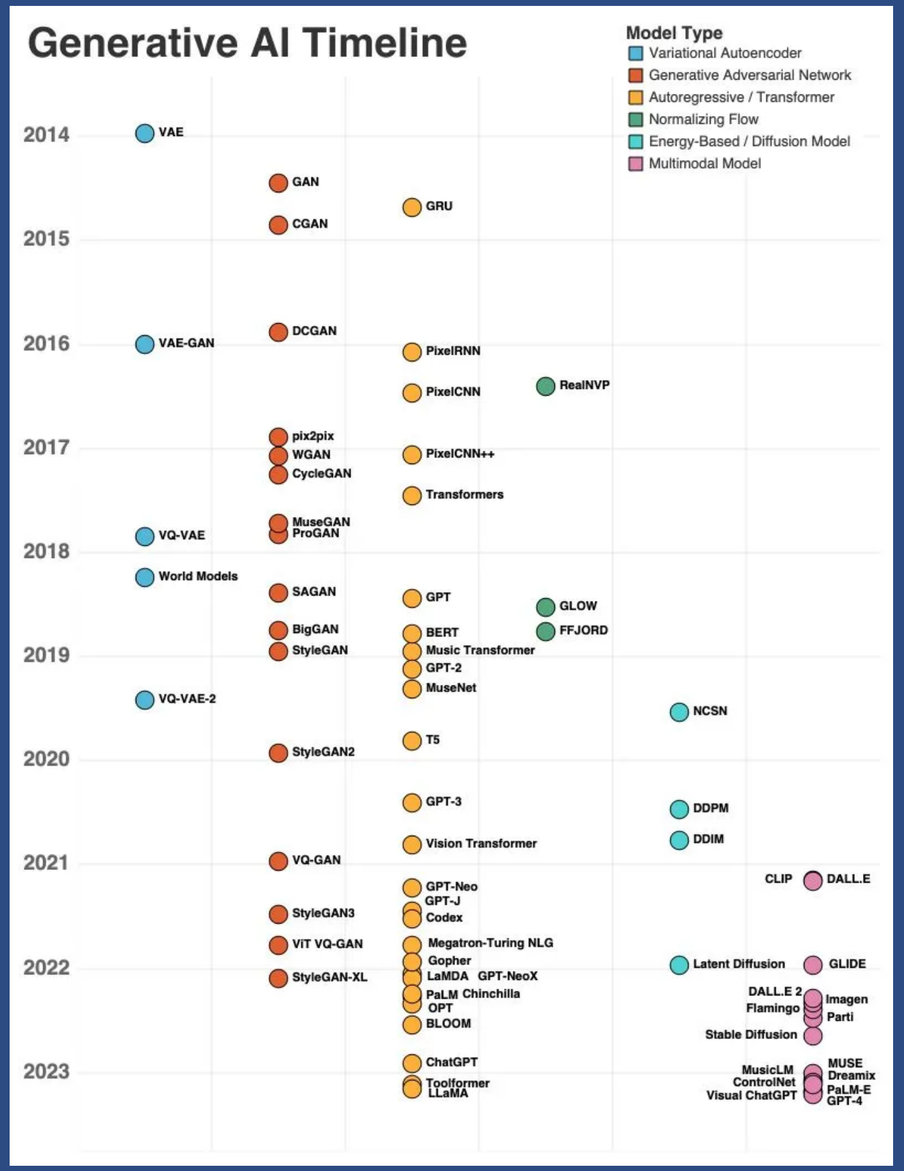
1. Approach Methods
2. State-of-the-art Models
3. I2V Architecture

Generative AI



Discriminative and Generative

Approach Methods



VAEs

- Its consists of an encoder and decoder
- The encoder maps high-dimensional input data into a low-dimensional representation
- The decoder attempts to reconstruct the original high-dimensional input data by mapping this representation back to its original form
- Latent space to remember important features of data

GANs

- Its consists of two neural networks
- The generator takes in random values sampled from a normal distribution and produces a synthetic sample
- The discriminator tries to distinguish between the real and generated sample

Flow-based models

- Create new data that's similar to the data they were trained on
- Can calculate how likely a certain output is

Diffusion Model

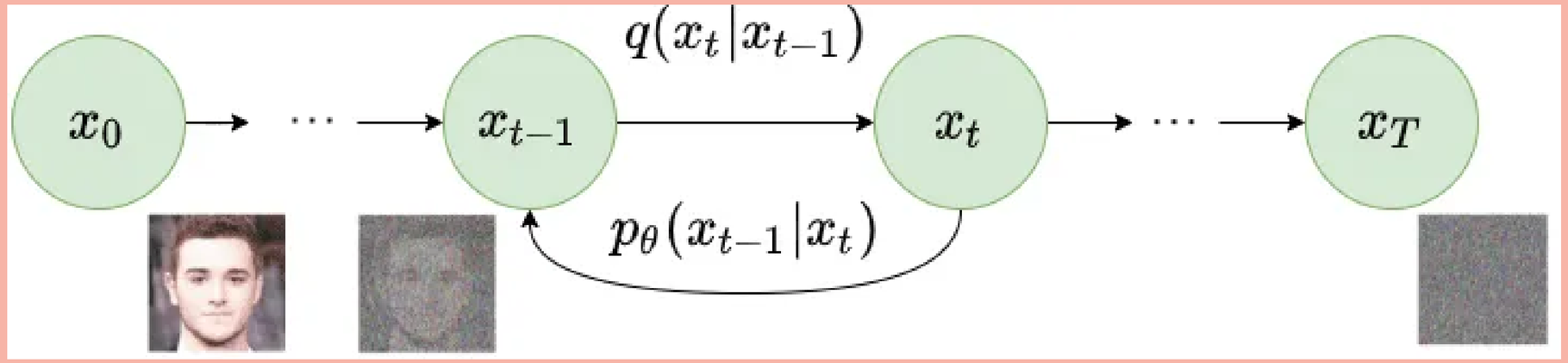
A STATE-OF-THE-ART GENERATIVE MODEL

Forward diffusion process

- Slowly and randomly add noise to the original image

Reverse diffusion process

- Generate original data from the noise.



Overview

GAN: Adversarial training

VAE: maximize variational lower bound

Flow-based models: Invertible transform of distributions

Diffusion models: Gradually add Gaussian noise and then reverse