Which Generative Model Should I Use?

Philipp Krähenbühl, UT Austin

Recap

Auto-encoder

Flow-based

GAN

VAE
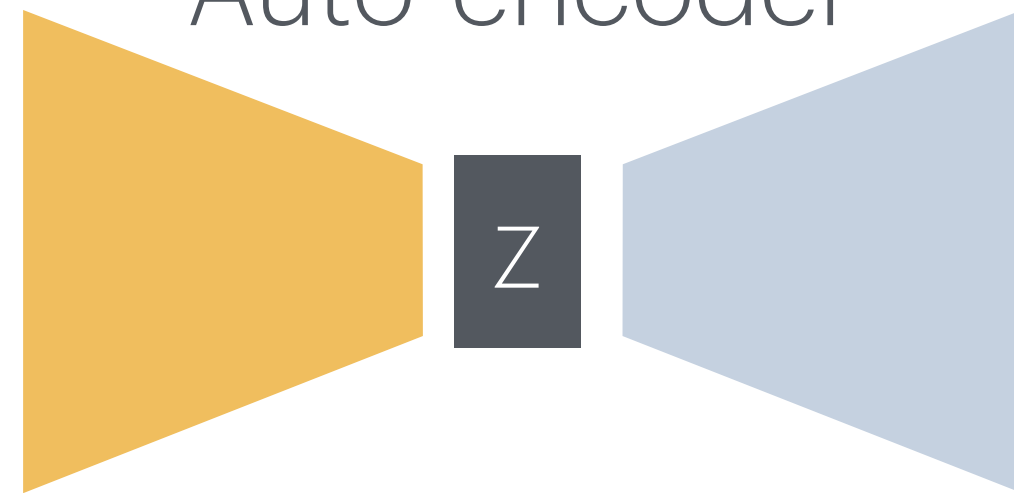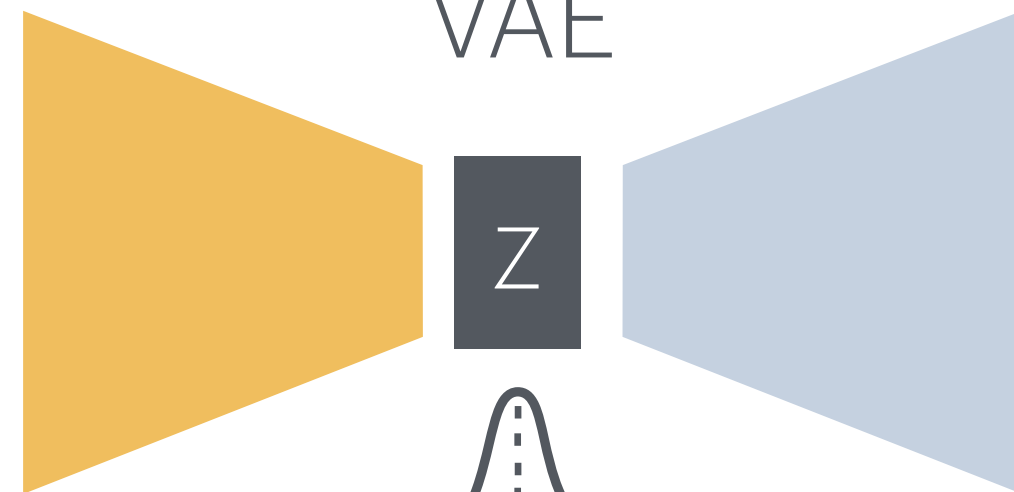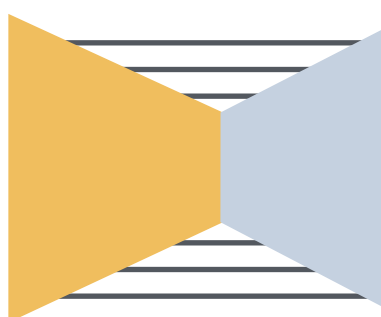
Diffusion

Auto-regressive

Auto-encoder
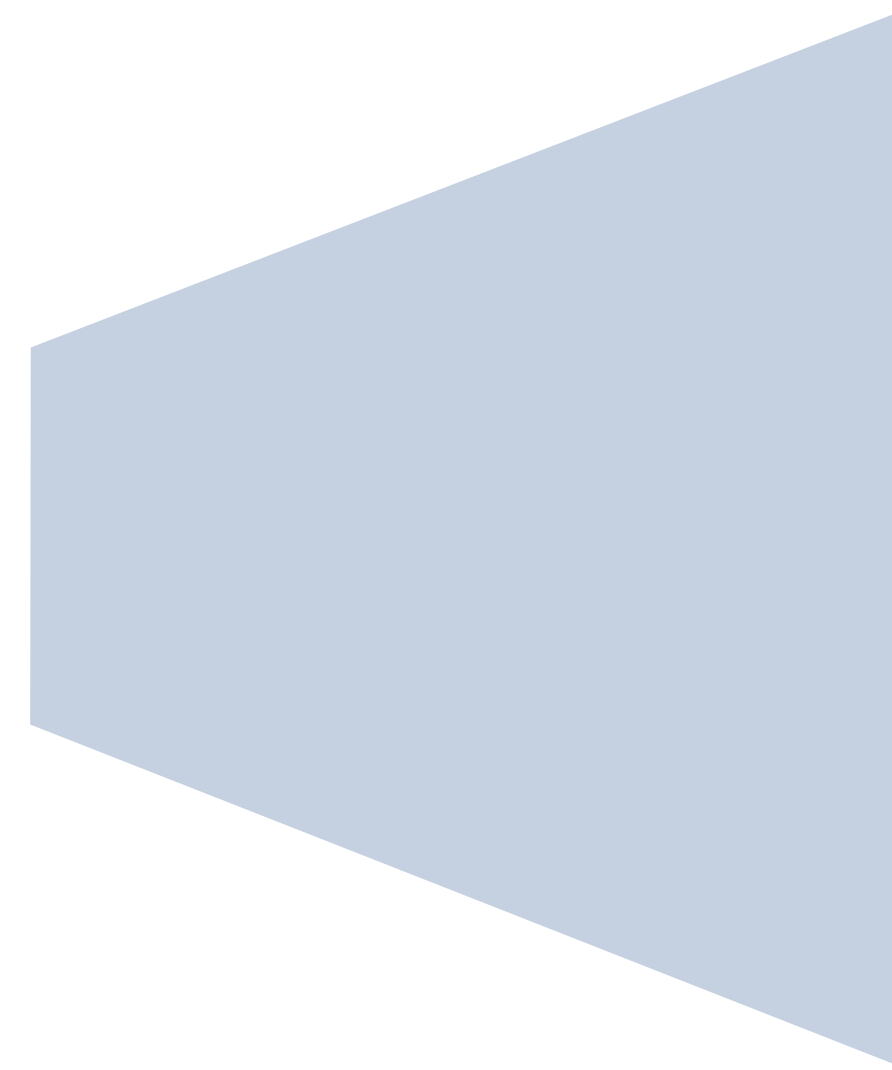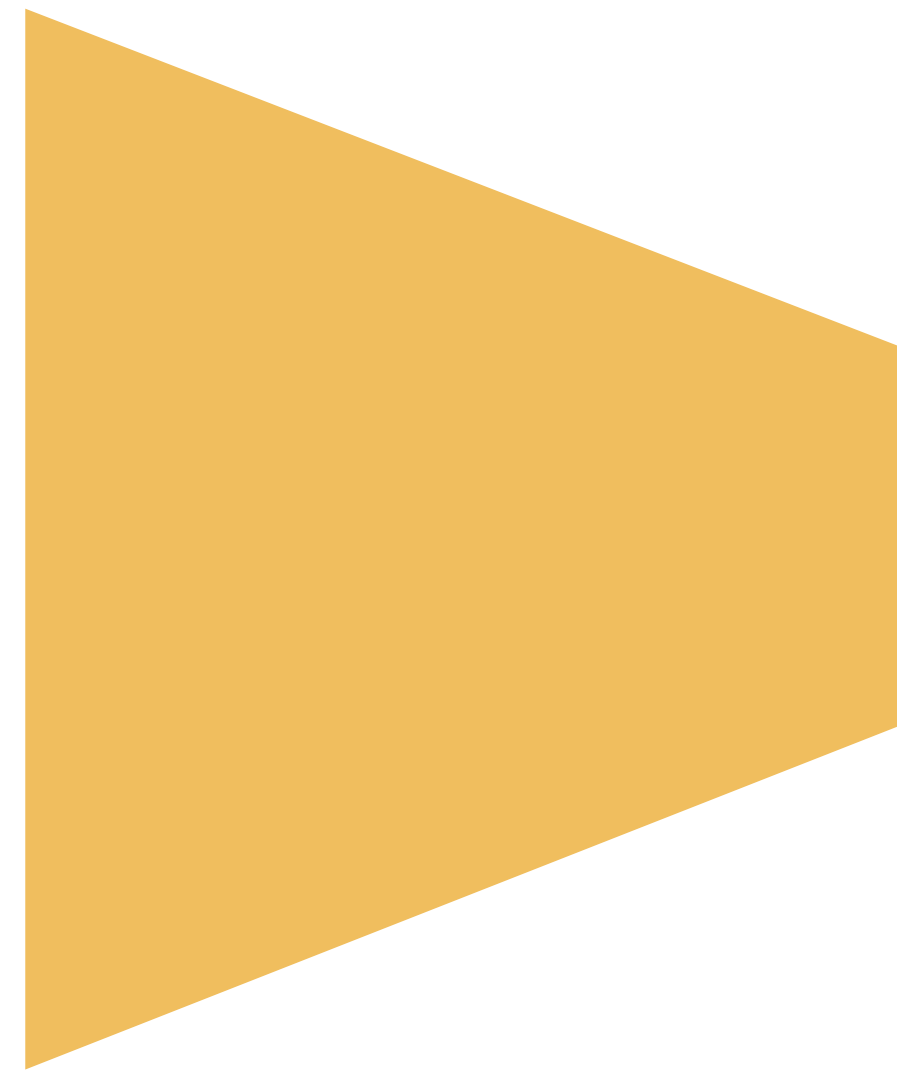
Variational Auto-Encoder

Generative Adversarial Networks

Flow-based Models

Diffusion Models

Auto-regressive Models

What model should I use?

As a generative model
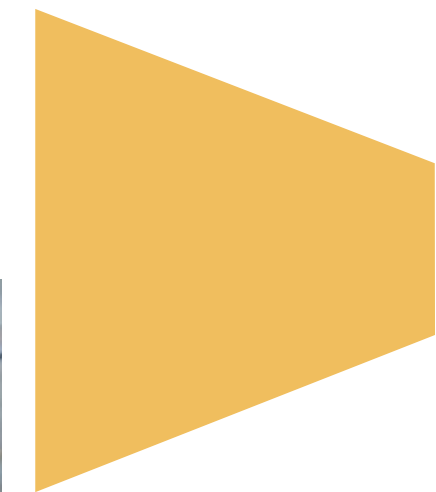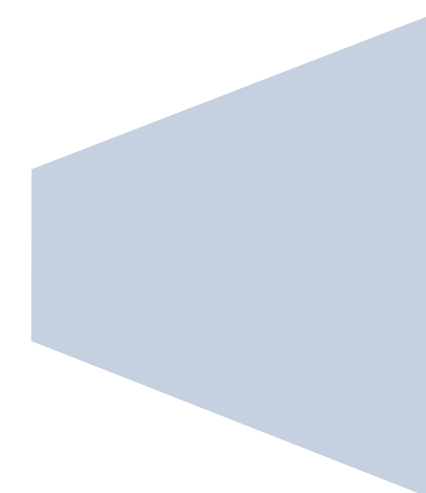

Auto-encoder

Flow-based

GAN

VAE

Diffusion

Auto-regressive

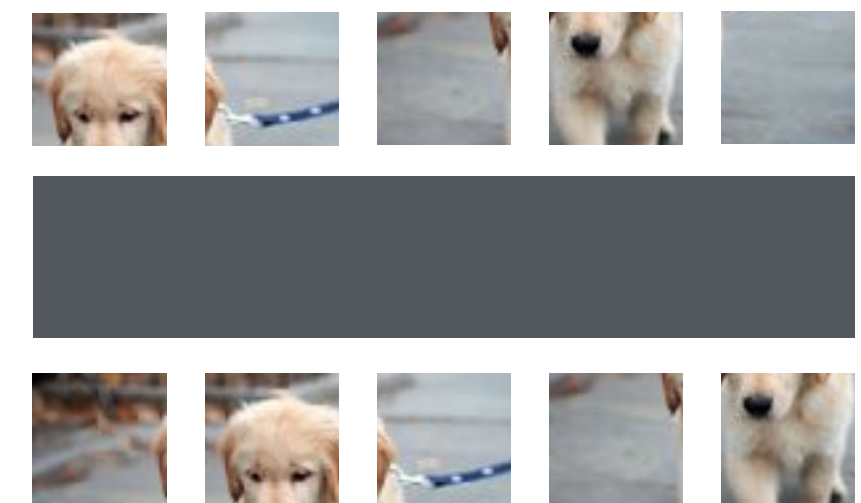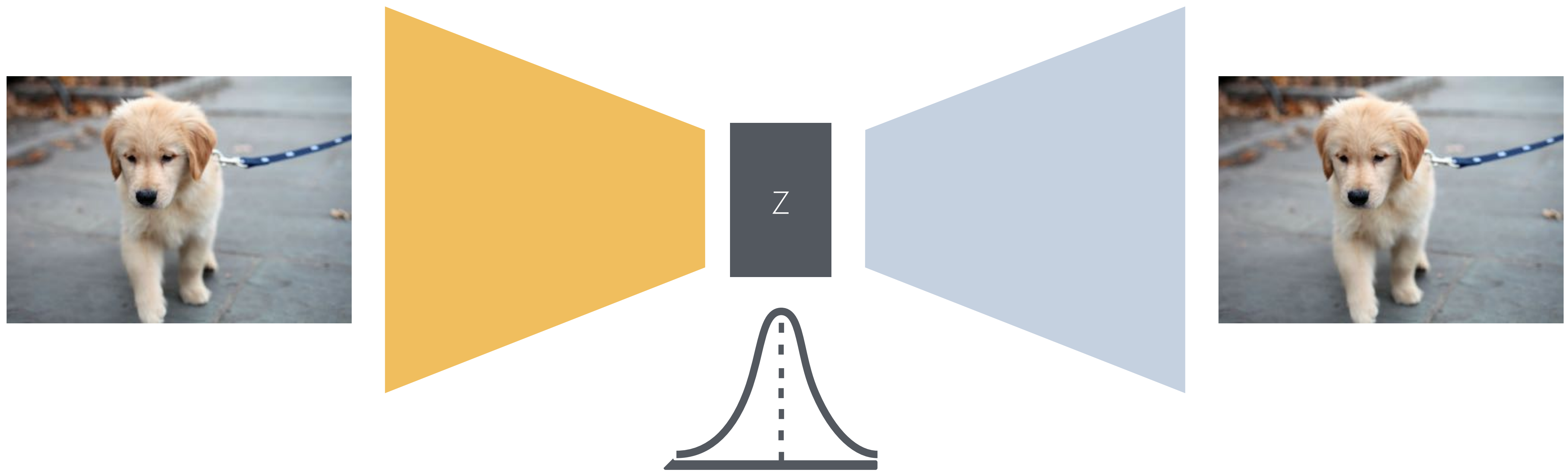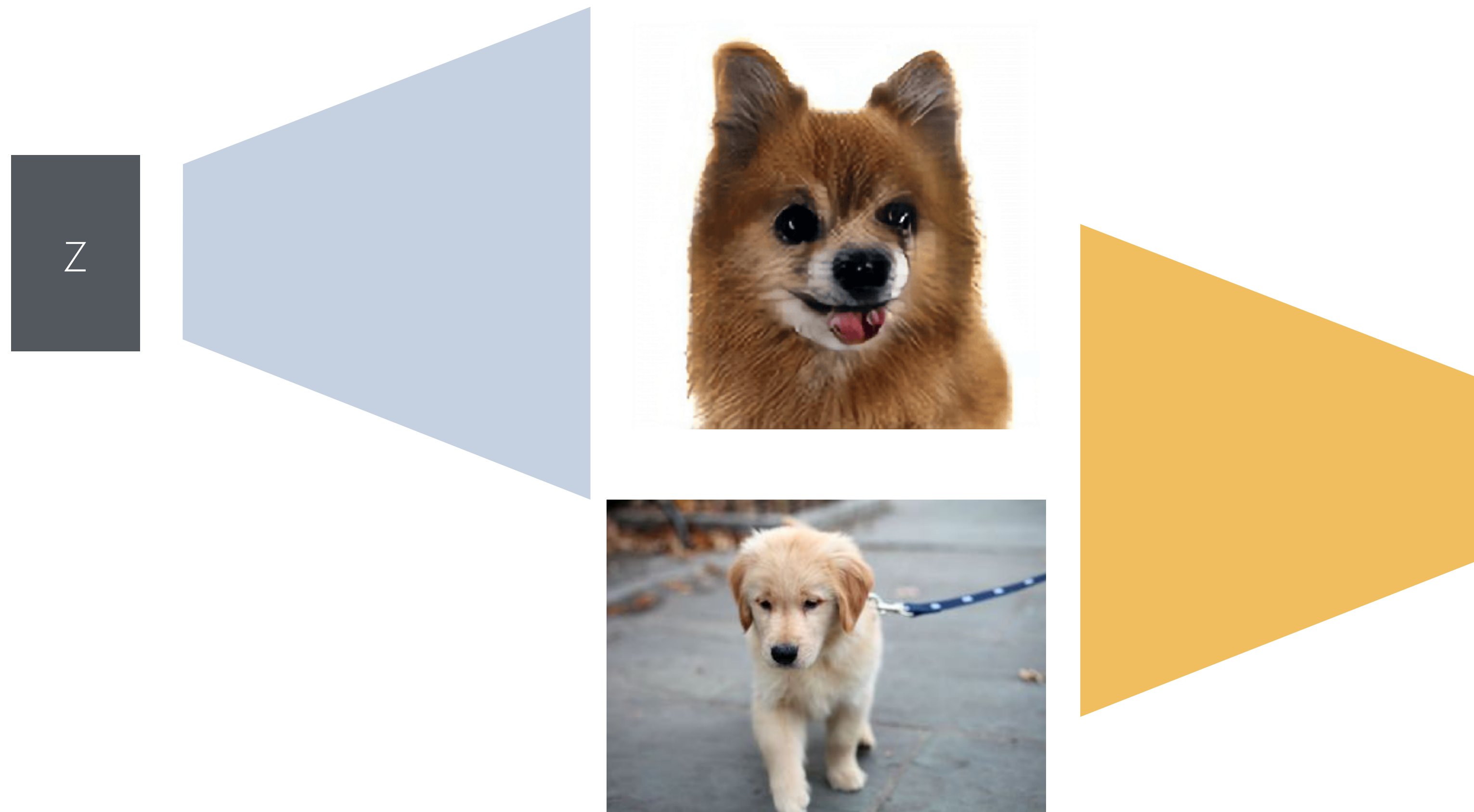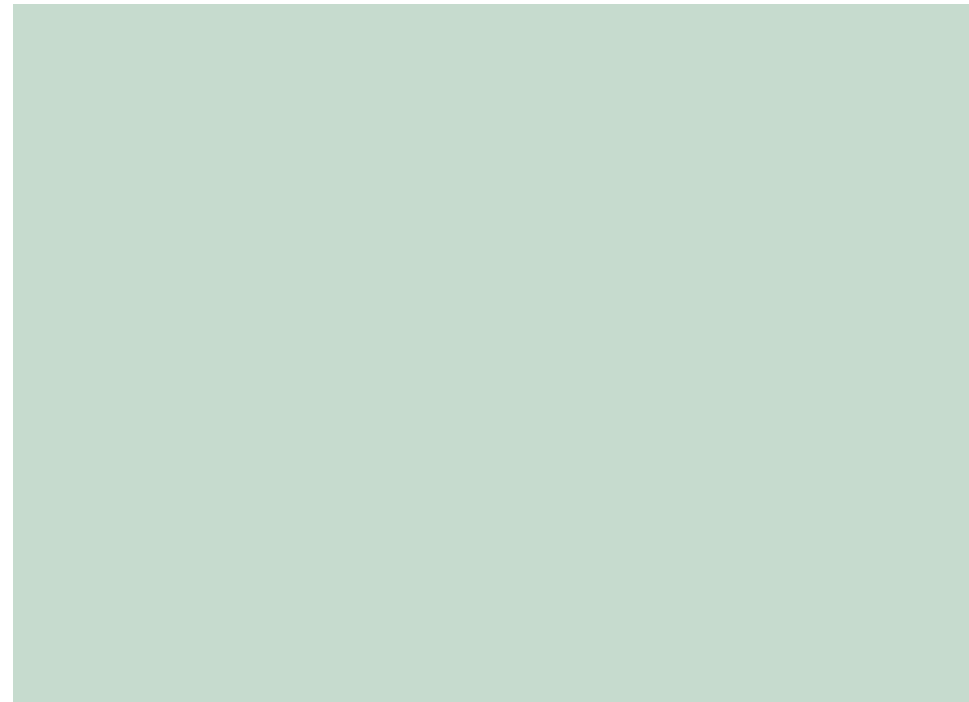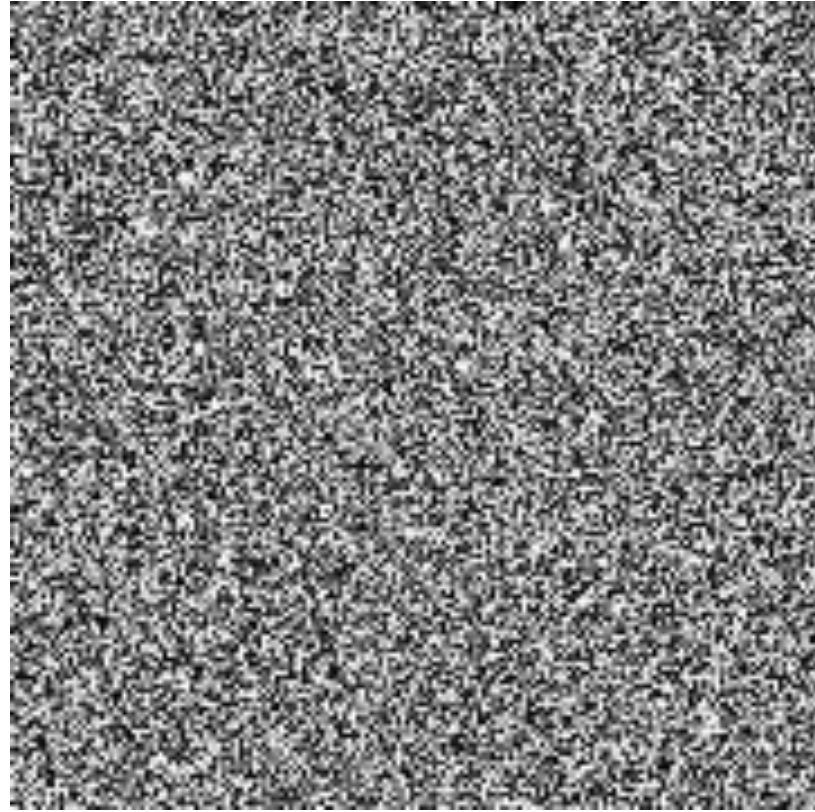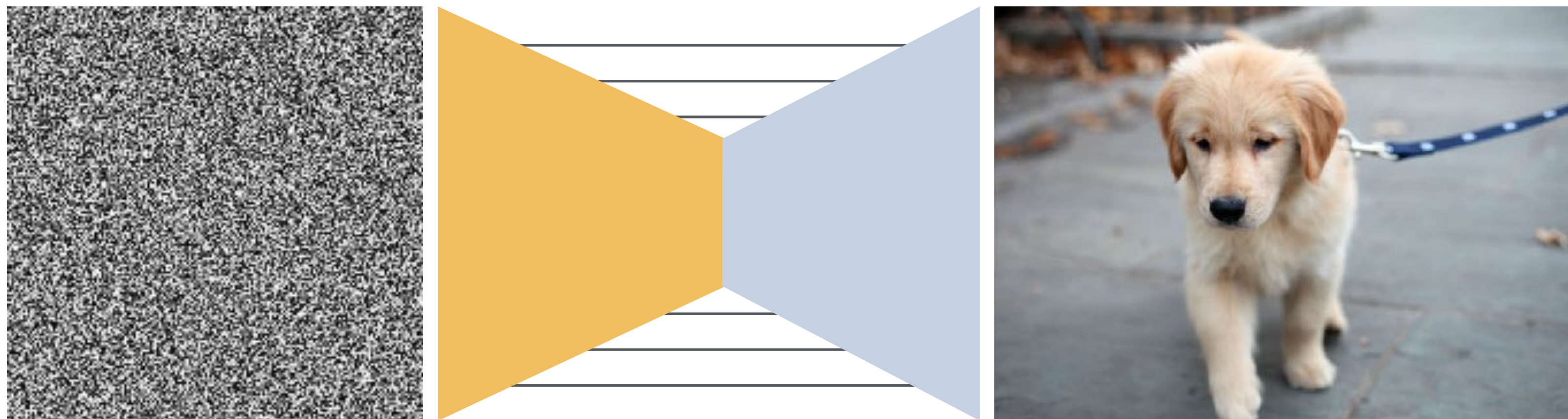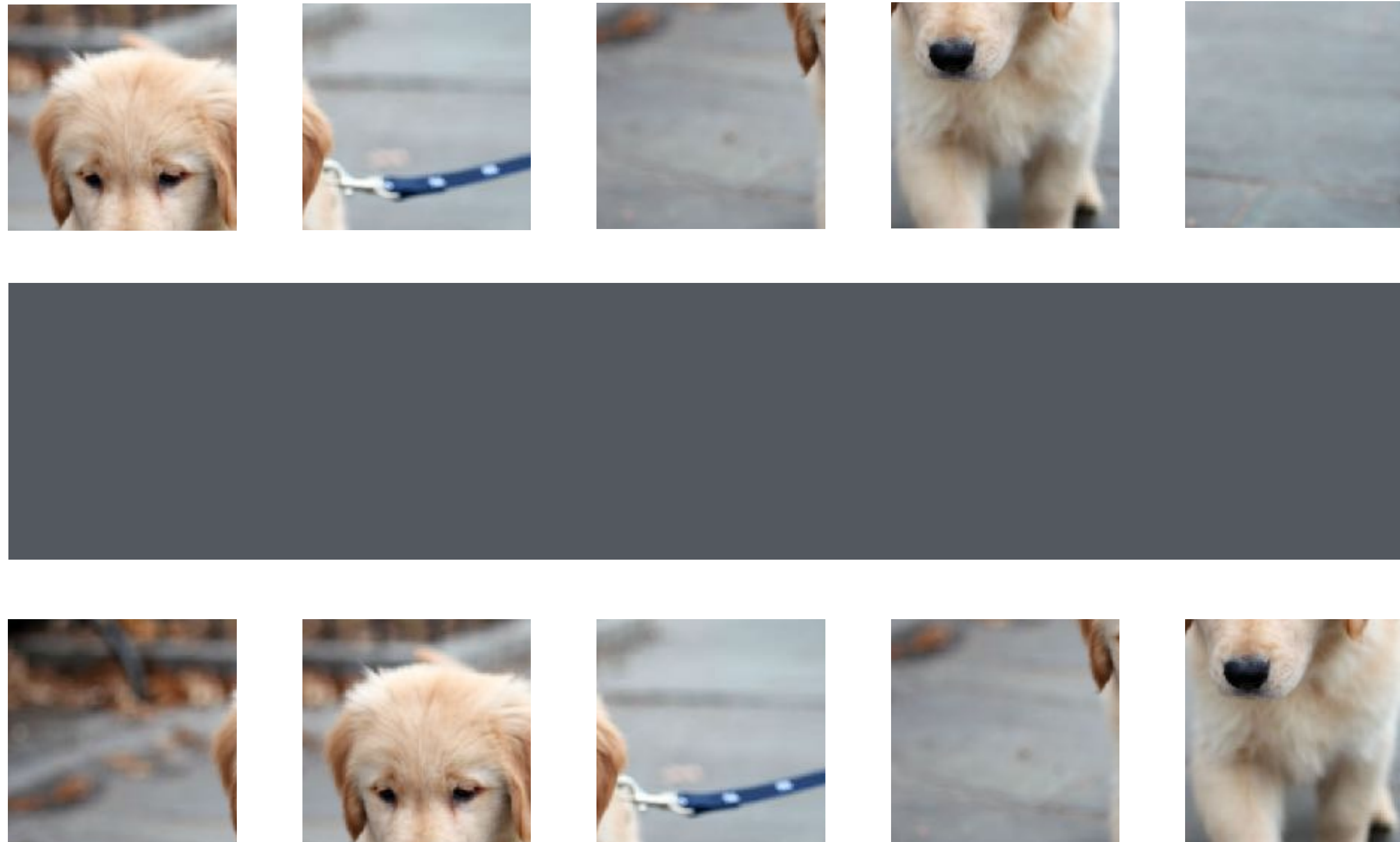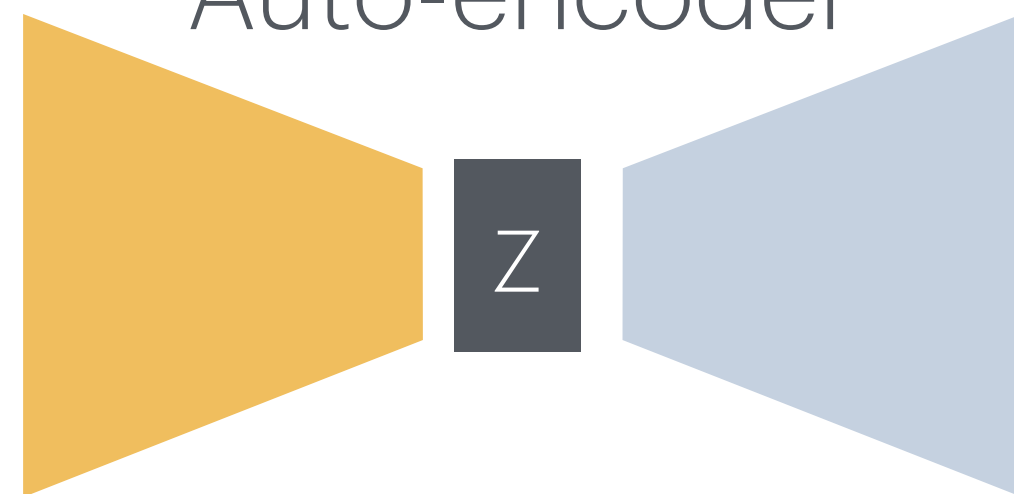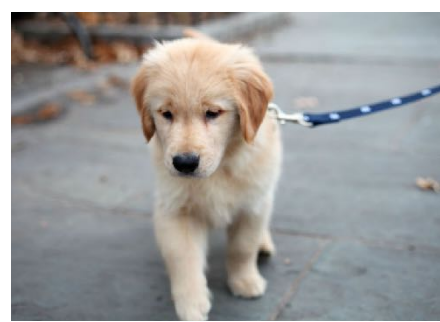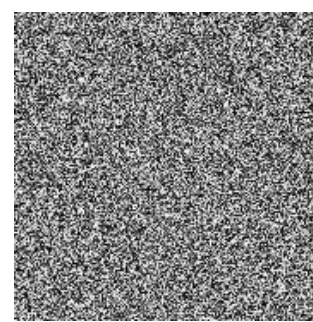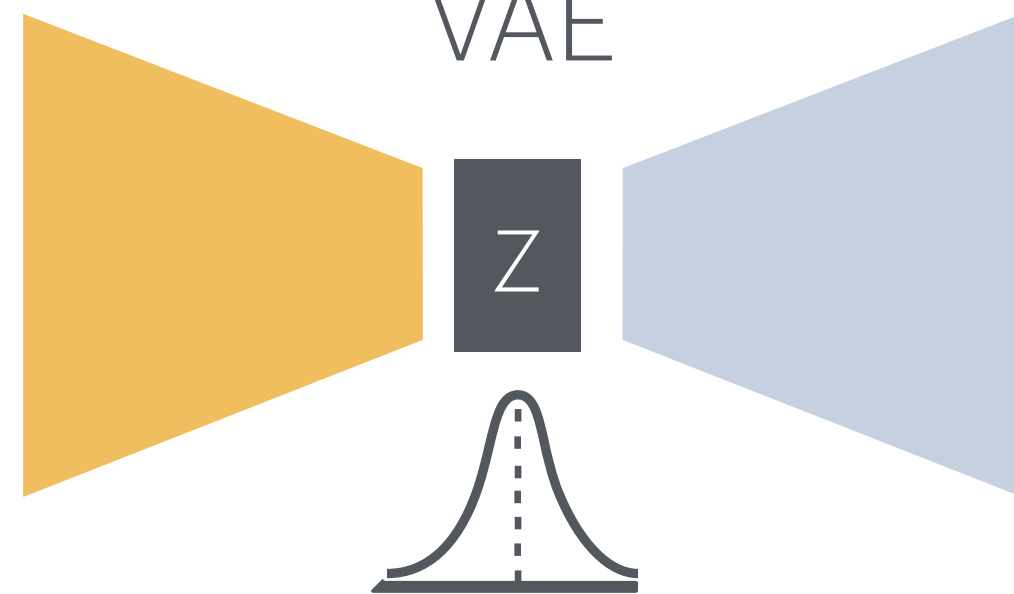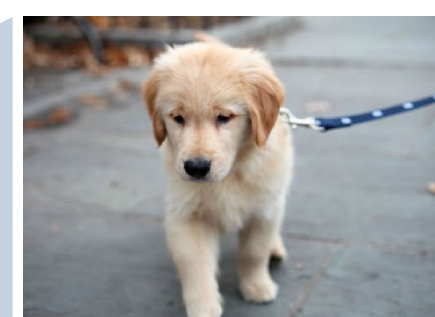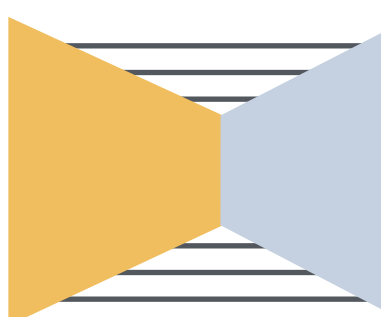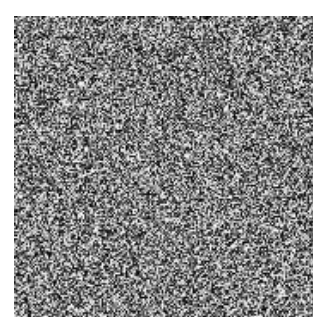# What model should I use?

Other uses

Auto-encoder

Flow-based
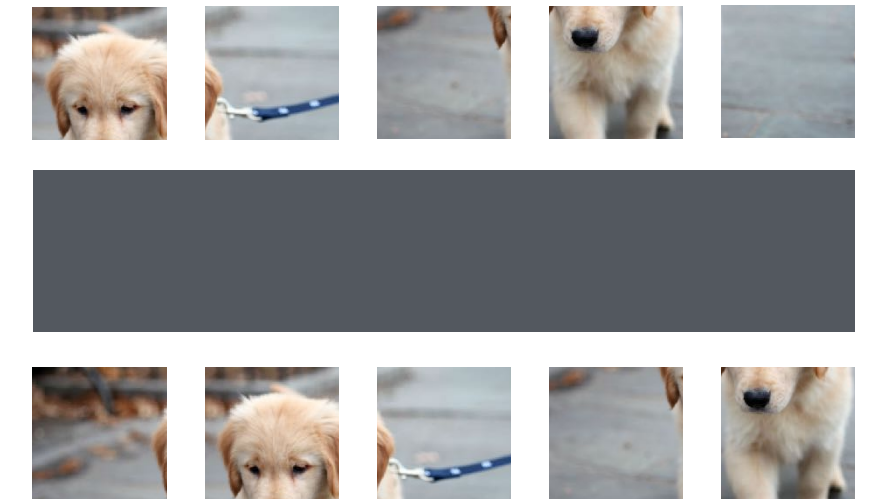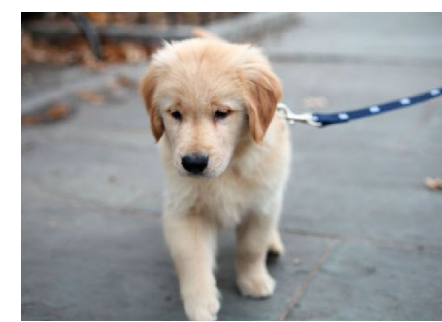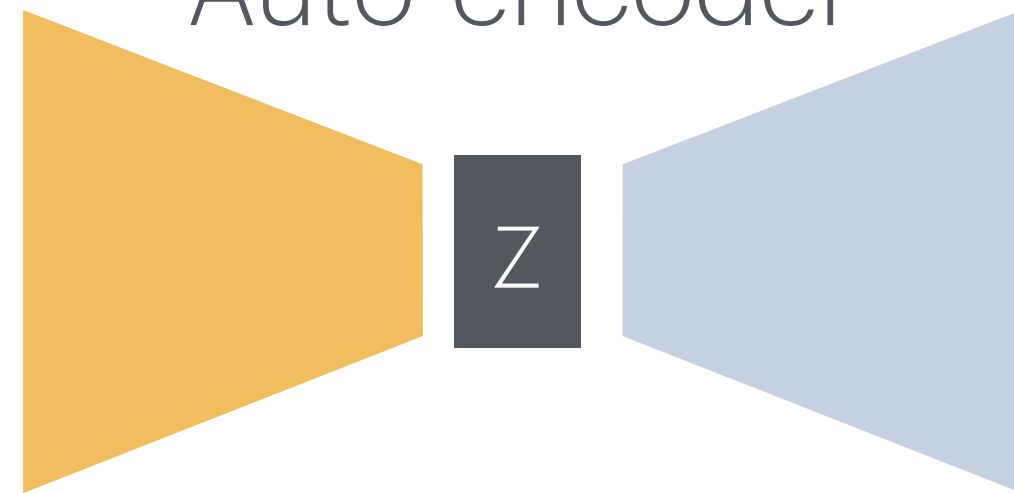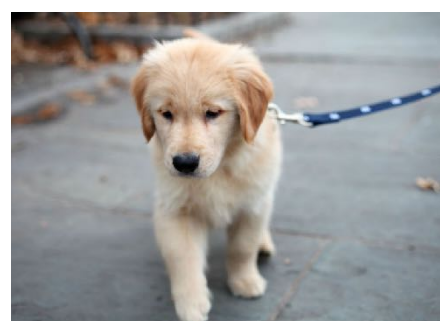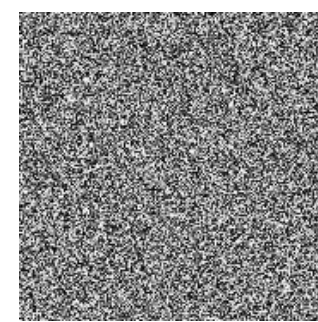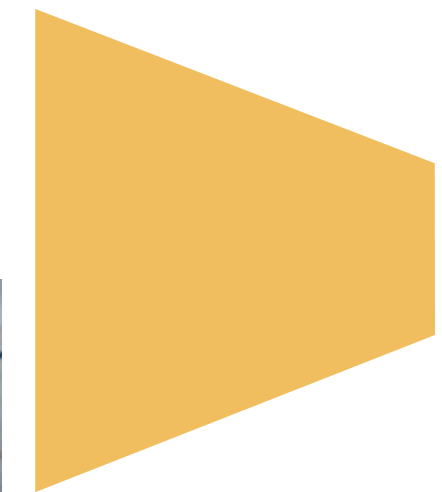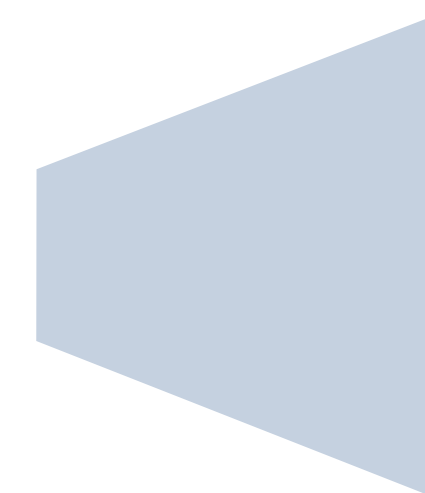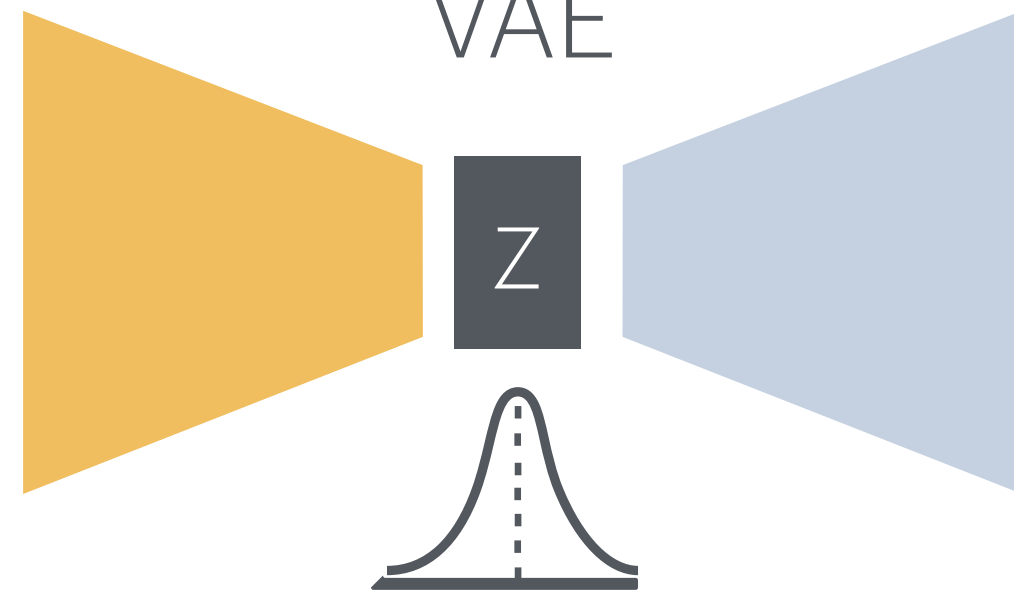
GAN

VAE

Diffusion

Auto-regressive

What model should I use?

Pre-trained models exist

Own domain
No prior models exist

What model should I use?
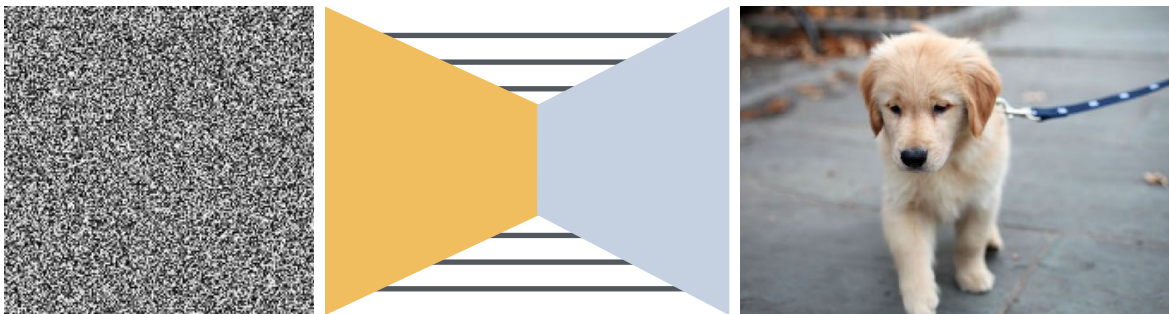
Pre-trained models exist

Own domain
No prior models exist

Big compute   Small compute

What model should I use?

Pre-trained models exist

Own domain
No prior models exist

Big compute

Train
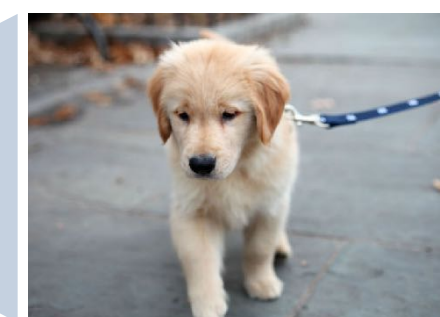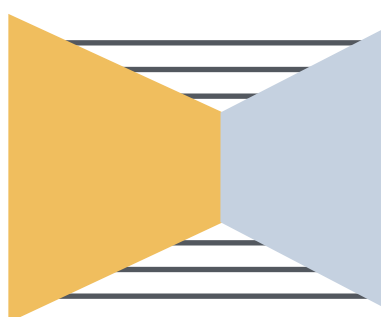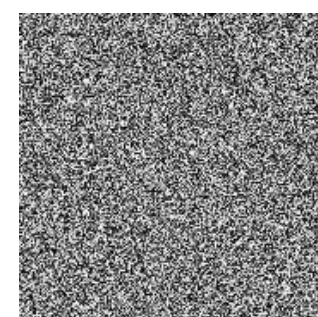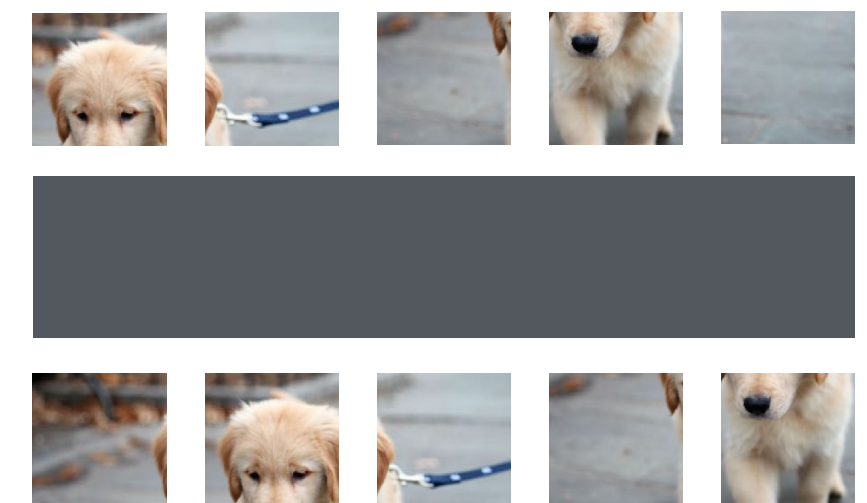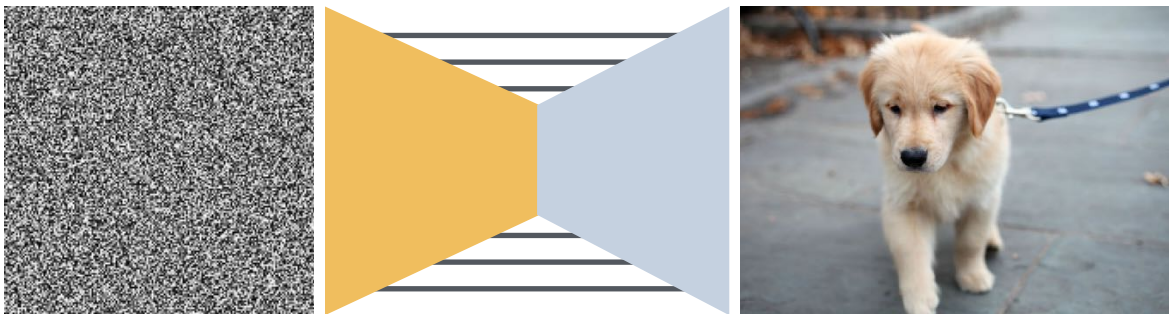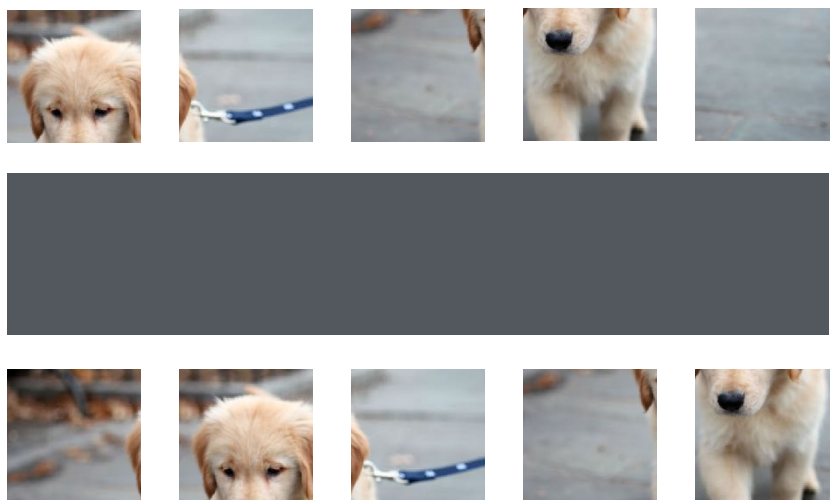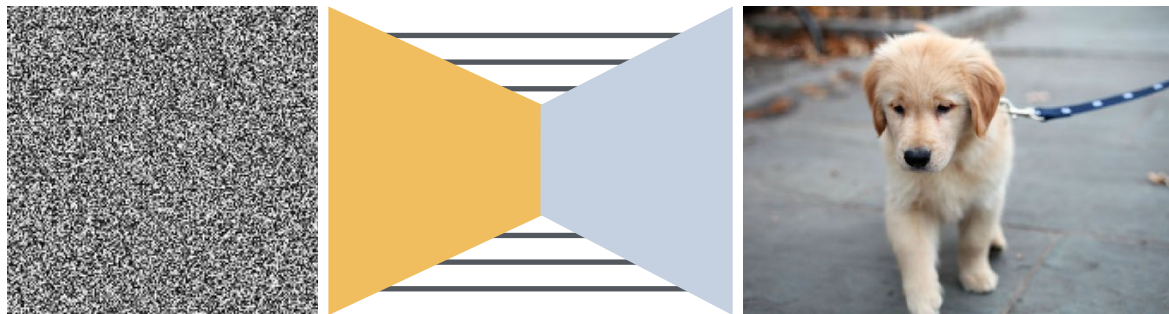
Diffusion

Auto-regressive

Small compute

Fine-tune

Diffusion

Auto-regressive

What model should I use?

Pre-trained models exist
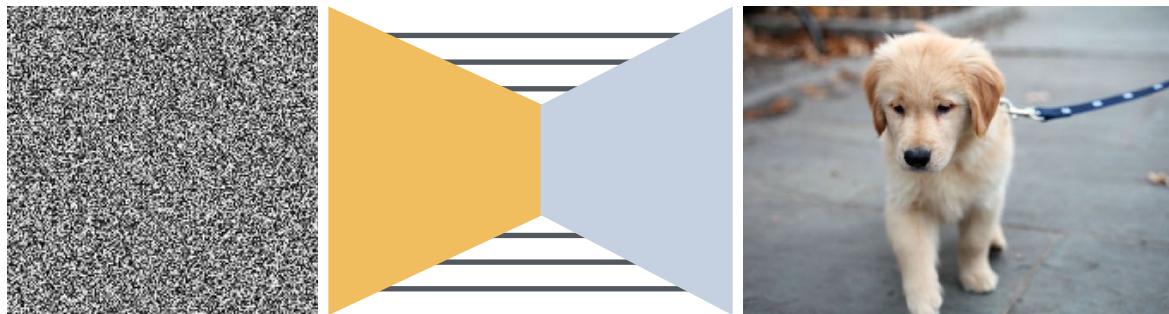
Own domain
No prior models exist
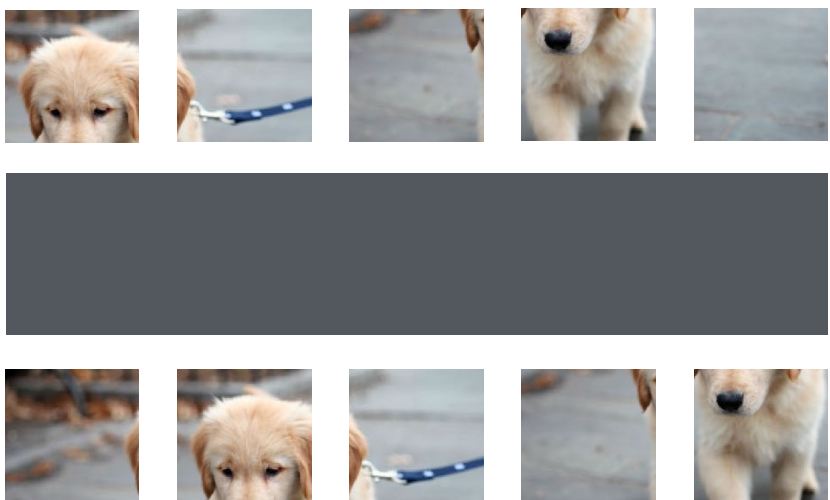
Big compute

Small compute

Big data, big compute

Small data
small compute

Train

Fine-tune

Diffusion

Diffusion

Auto-regressive

Auto-regressive

What model should I use?

Pre-trained models exist

Own domain
No prior models exist
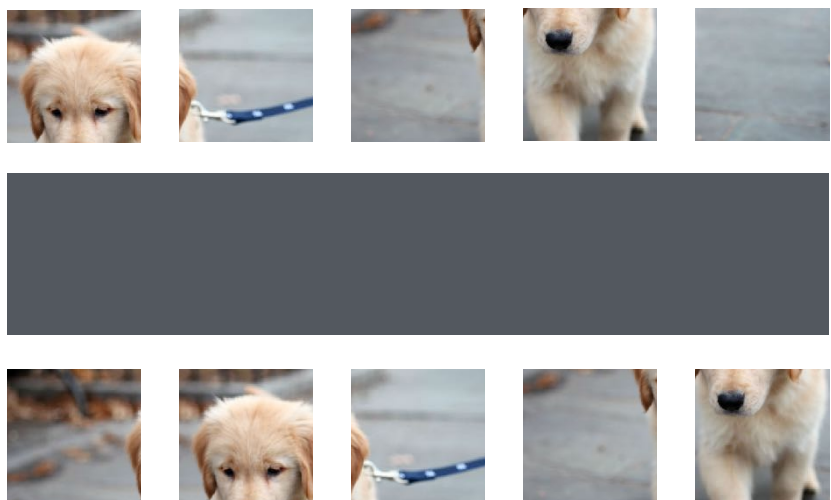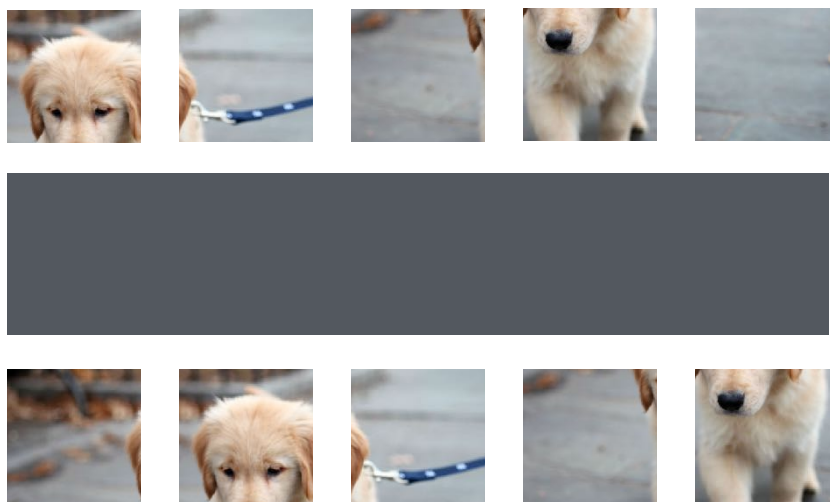
Big compute

Train

Diffusion

Auto-regressive

Small compute
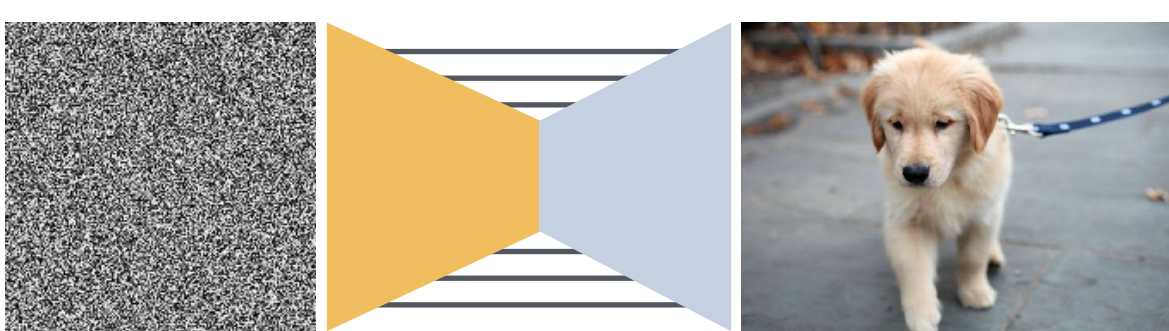
Fine-tune
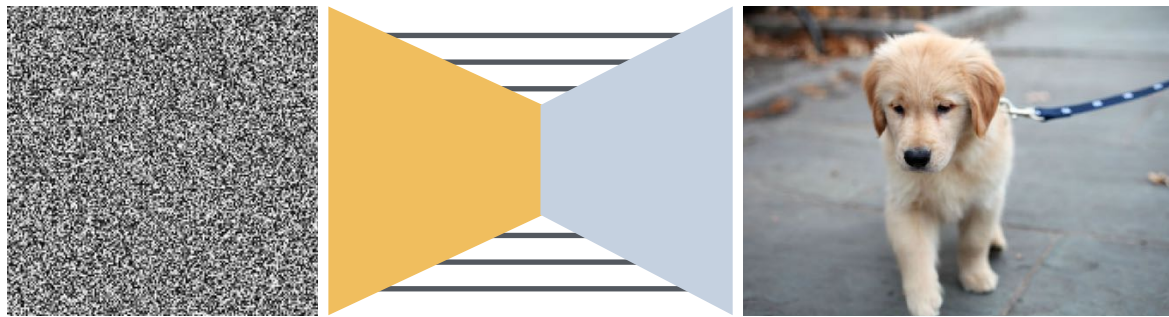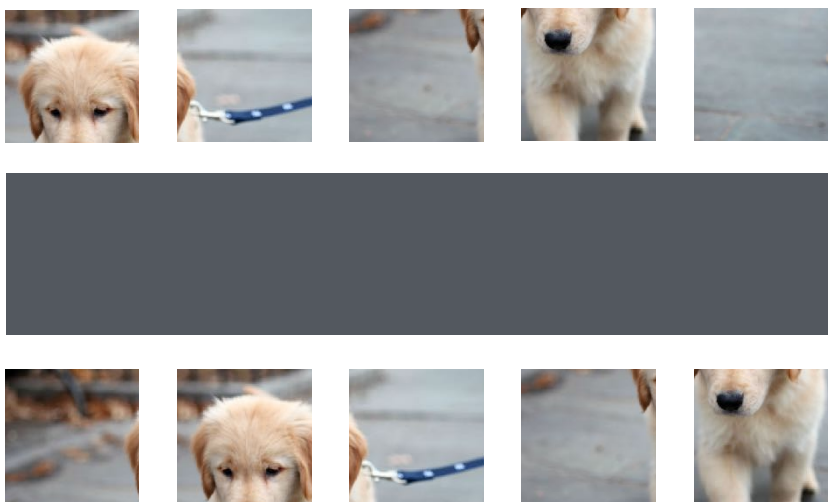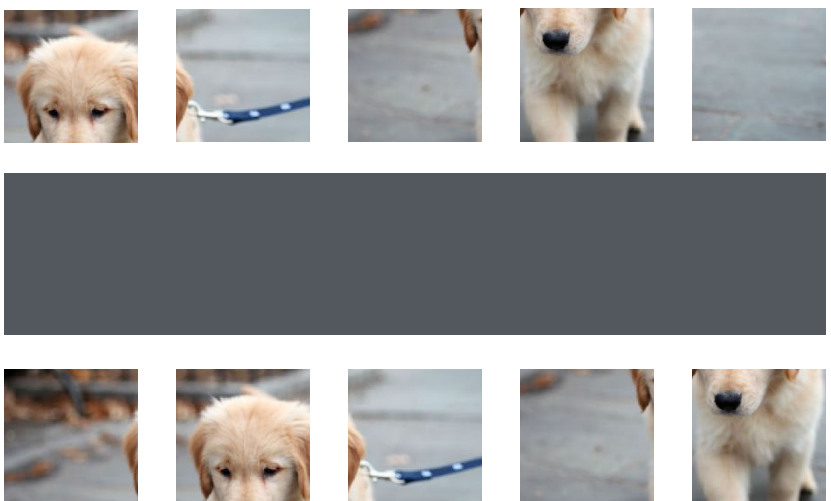
Diffusion

Auto-regressive

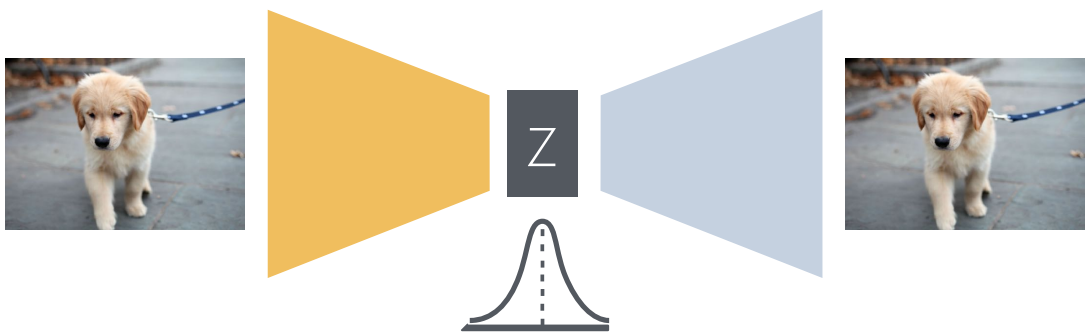Big data, big compute

Train

Diffusion

Auto-regressive
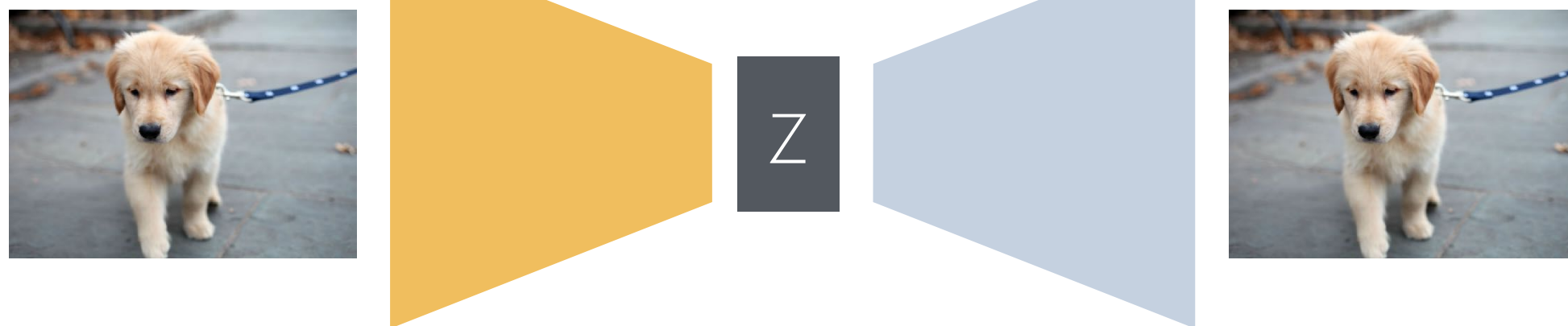
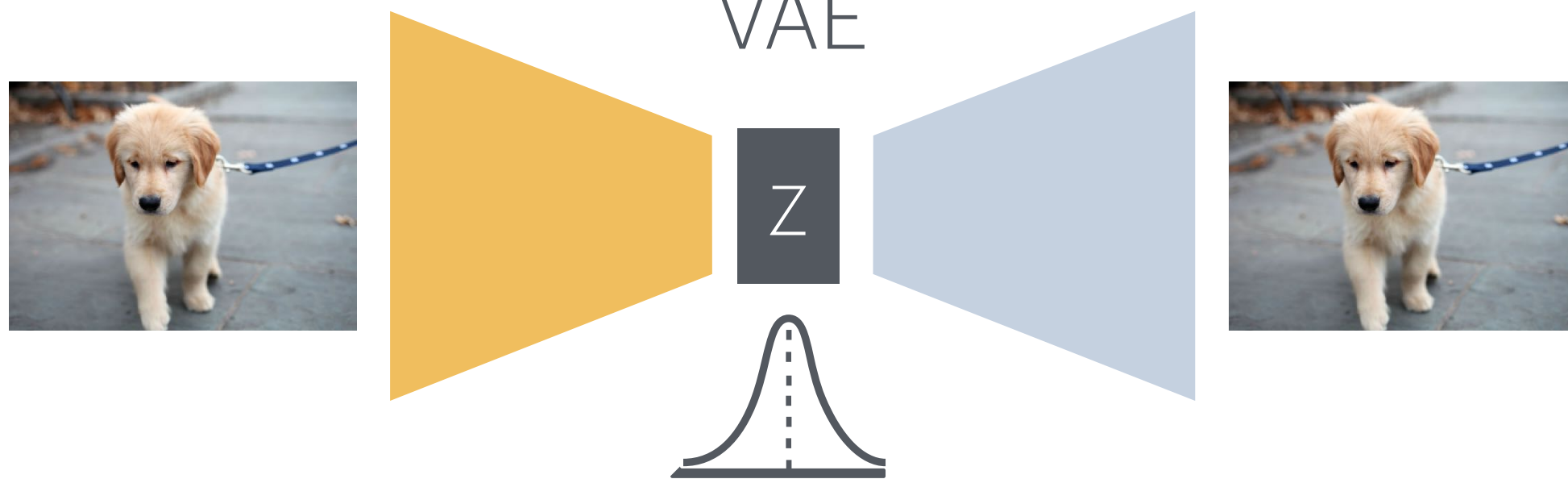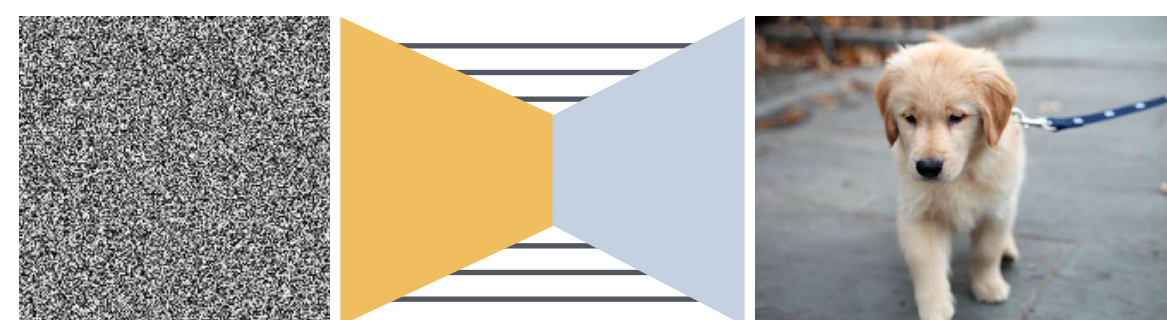Small data
small compute

Train

VAE

Recap

Auto-encoder

Flow-based

GAN

VAE

Diffusion

Auto-regressive