

GENERATIVE ADVERSARIAL NETWORKS

11785- Introduction to Deep Learning

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“This (GANs), and the variations that are now being proposed is the most interesting idea in the last 10 years in ML, in my opinion”

–Yann LeCun

Video: <https://www.youtube.com/watch?v=QiiSAvKJIHo>

WHAT ARE GANS?

Generative Adversarial Networks

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Generative Adversarial Networks

Generative Models

We try to learn the underlying the distribution from which our dataset comes from.

Eg: Variational AutoEncoders (VAE)

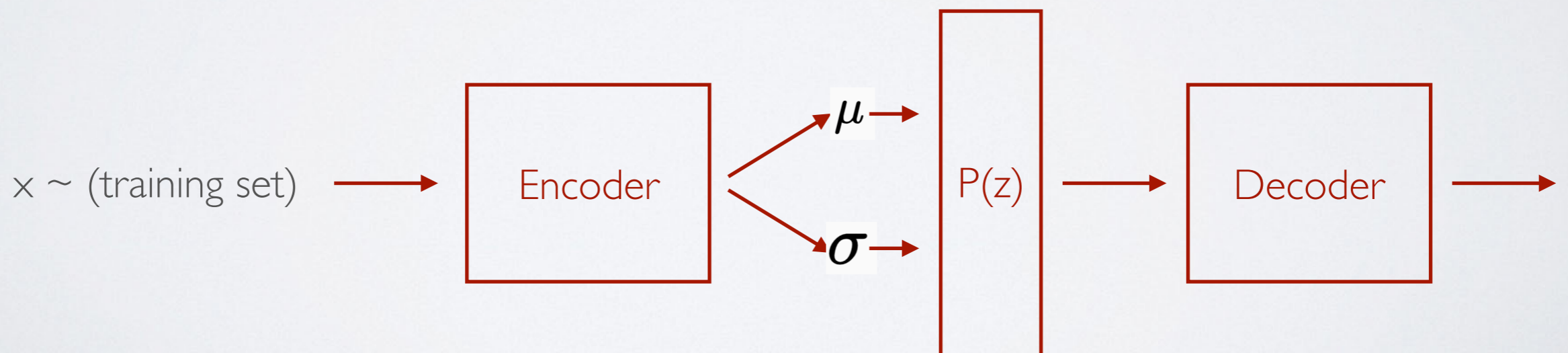
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Adversarial Training

GANS are made up of two competing networks (adversaries) that are trying beat each other.

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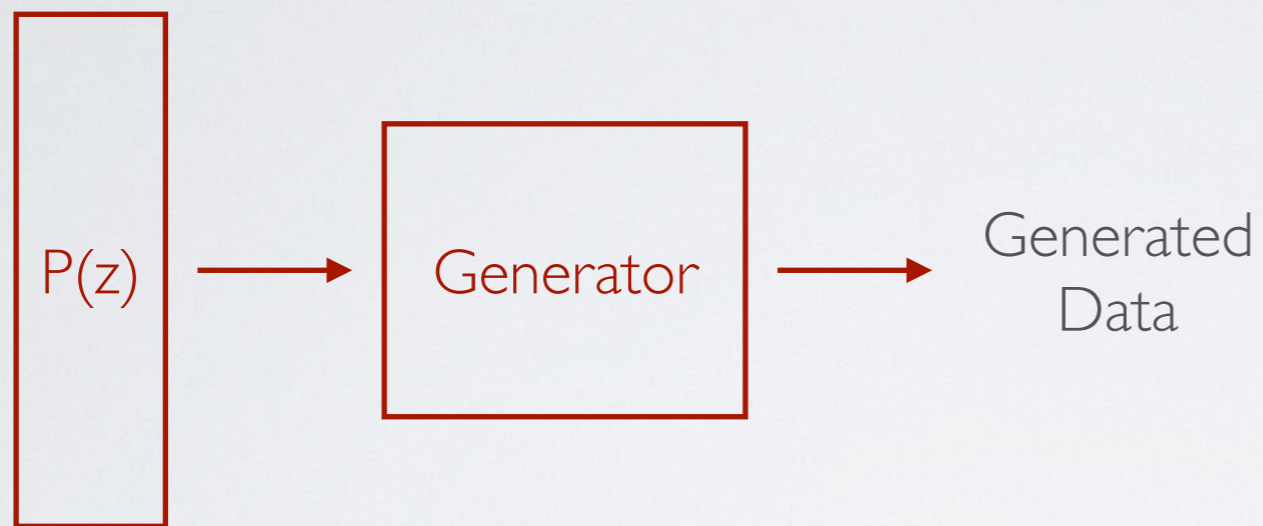
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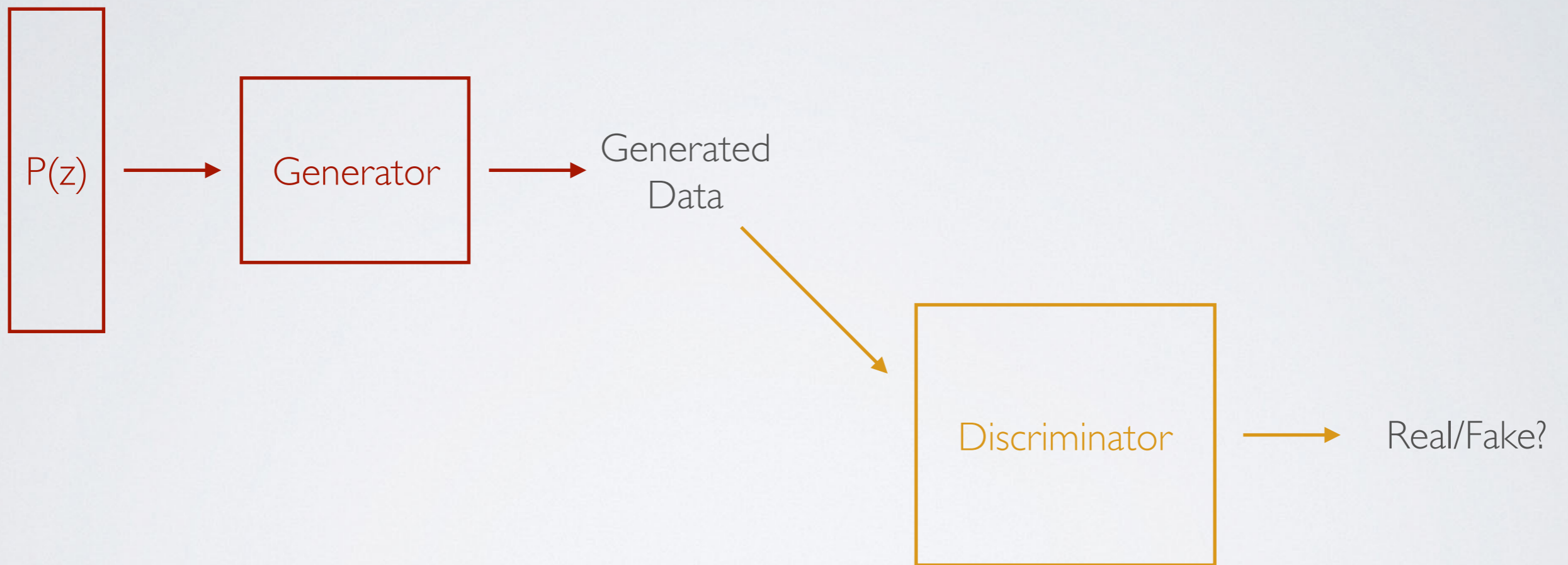
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Neural Networks

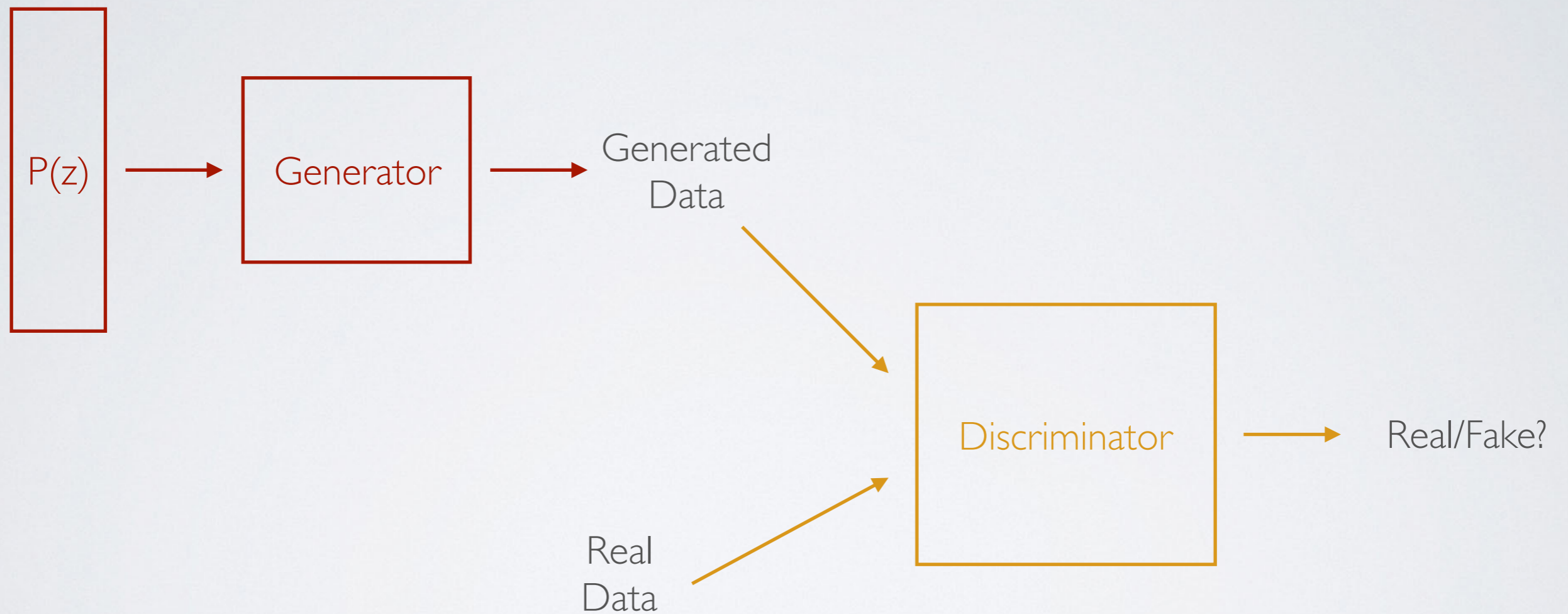
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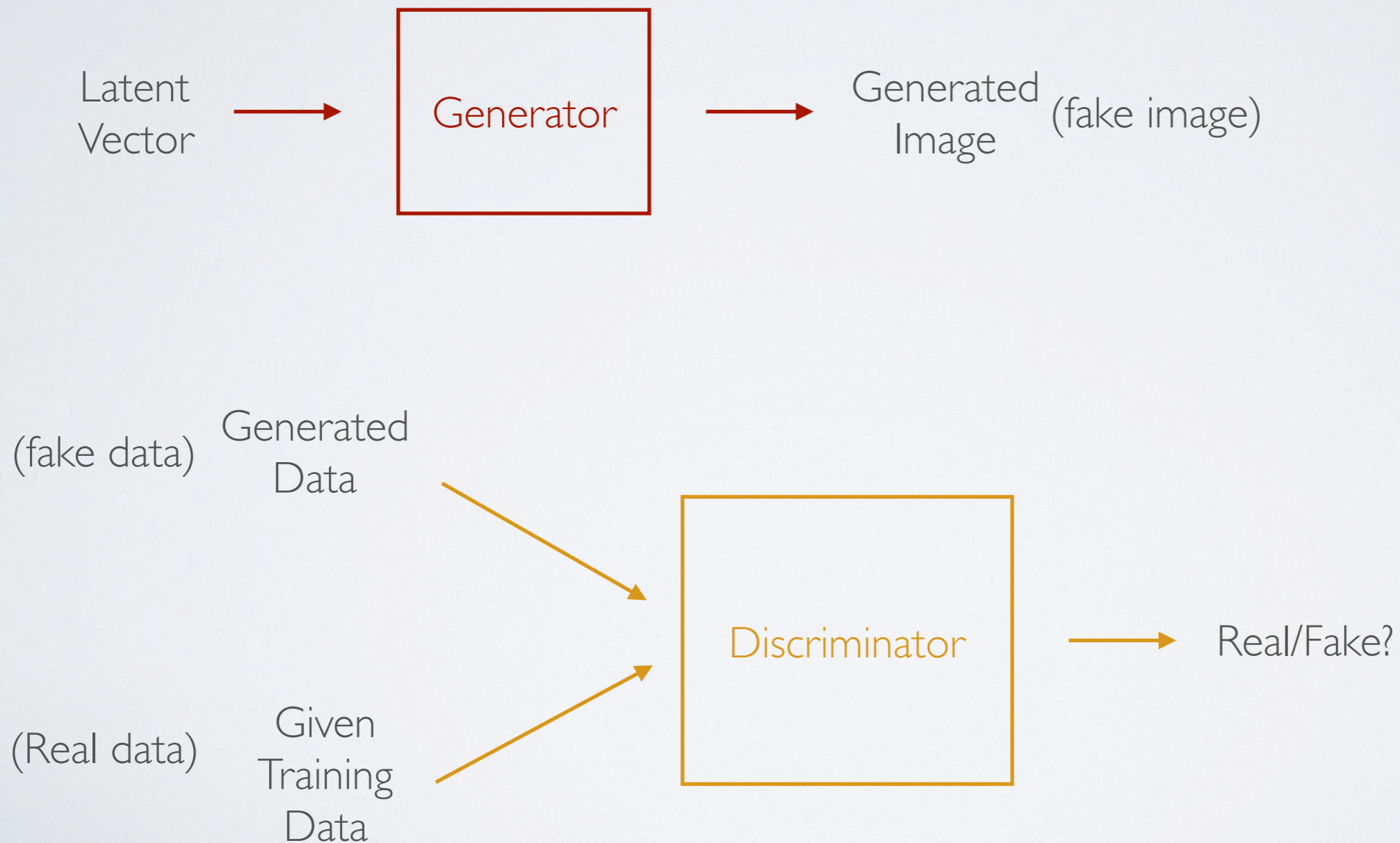
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HOW TO TRAIN A GAN?

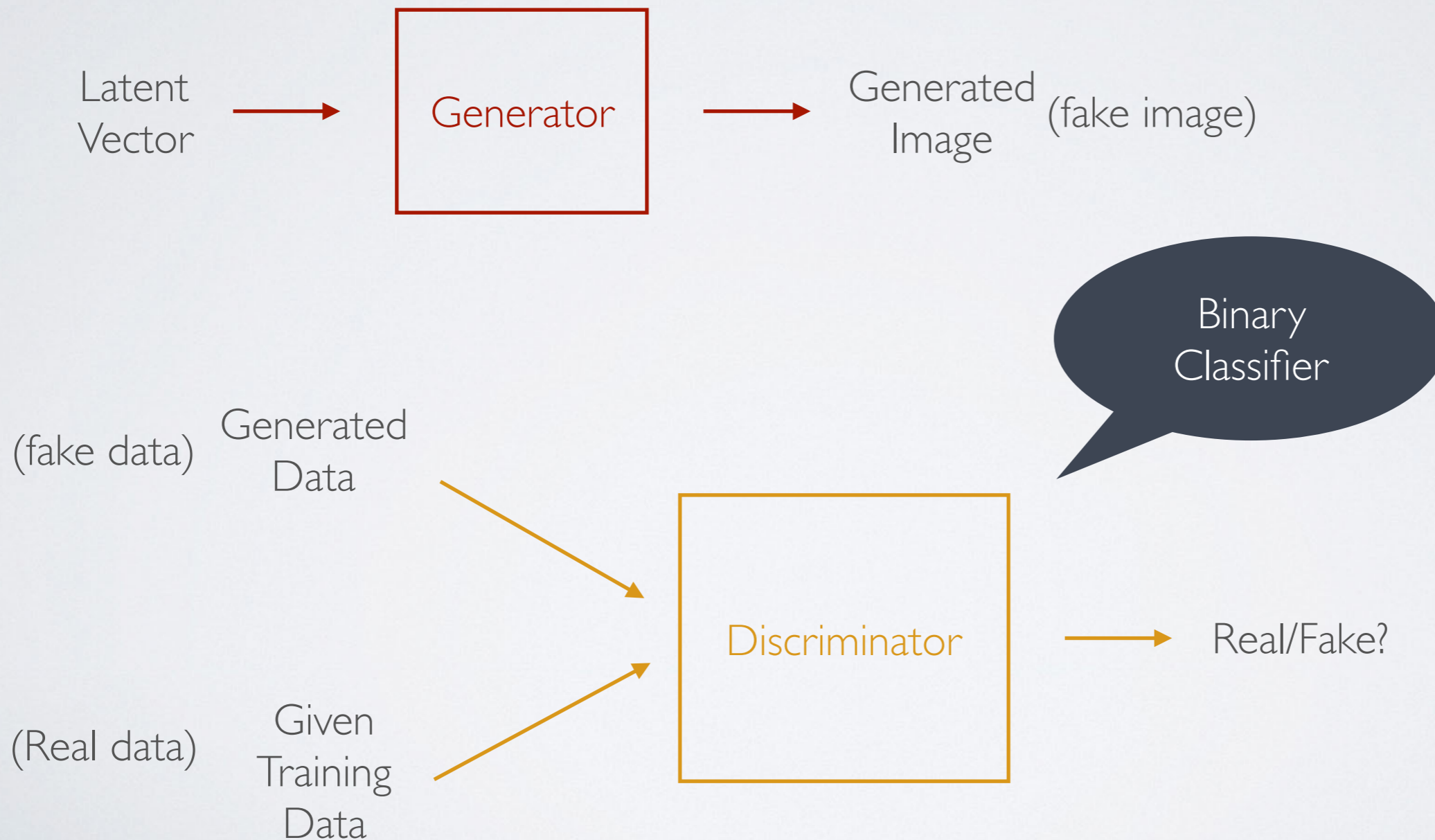
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Discriminator!

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The Discriminator is a Binary classifier.

The Discriminator has two class - Real and Fake.

The data for Real class is already given: THE TRAINING DATA

The data for Fake class? -> generate from the Generator

HOW TO TRAIN A GAN?

What's next? -> Train the Generator

But how? What's our training objective?

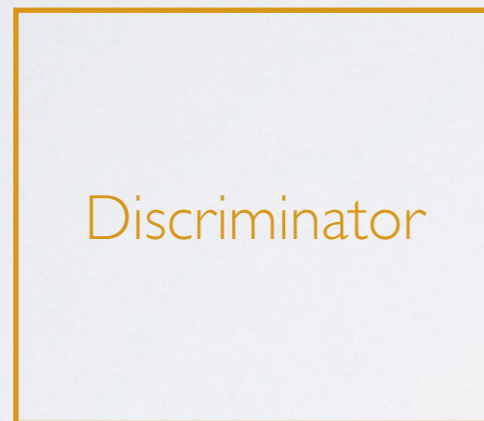
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But how? What's our training objective?

**Generate images from the Generator
such that they are classified incorrectly by the Discriminator!**

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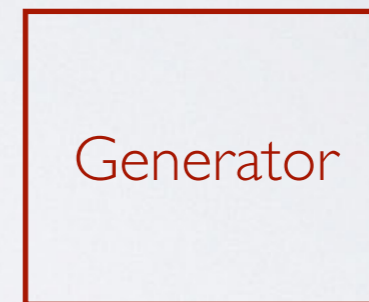


Step 1:
Train the Discriminator
using the current ability
of the Generator.

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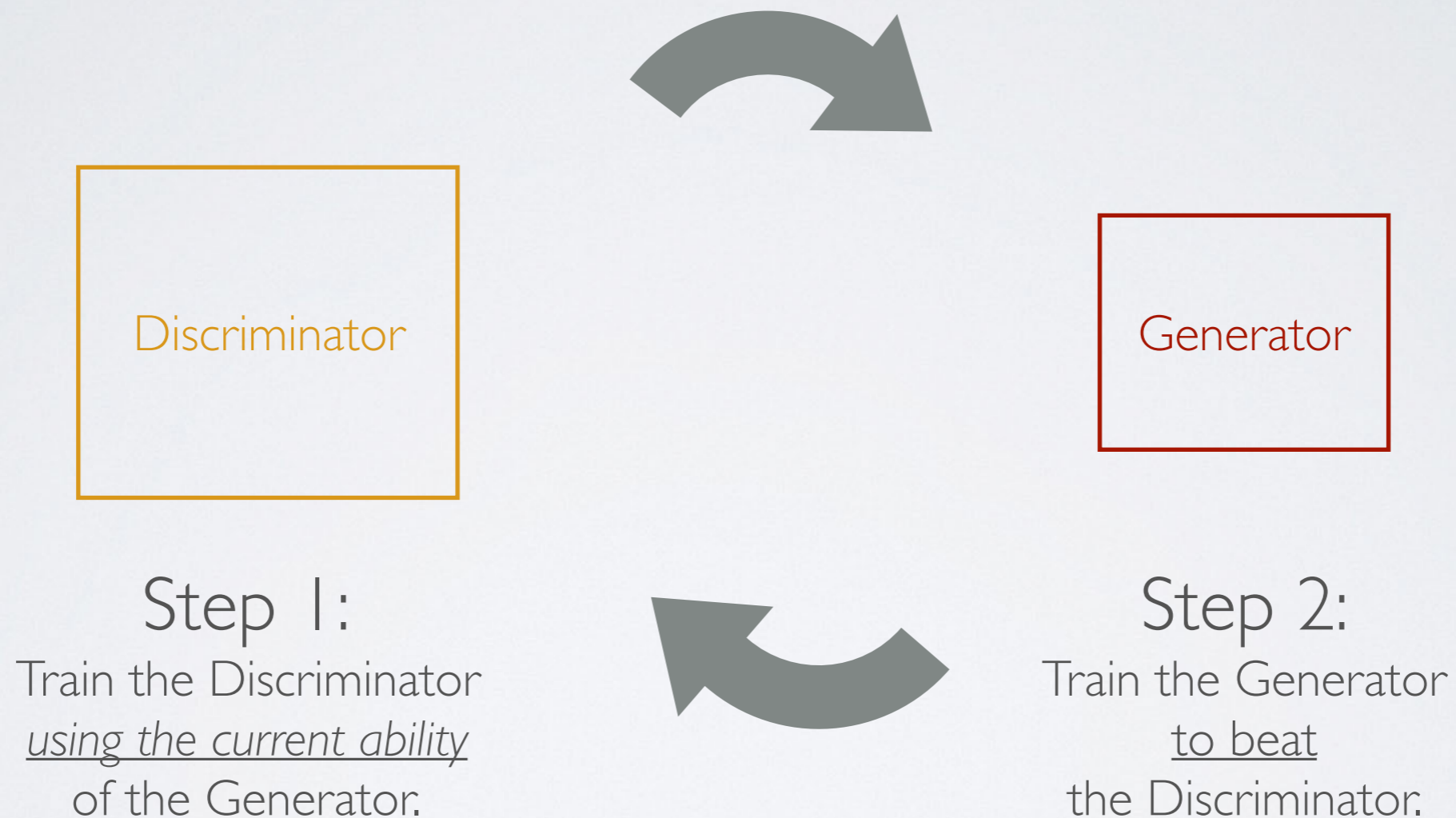
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MNIST AND FASHION-MNIST

