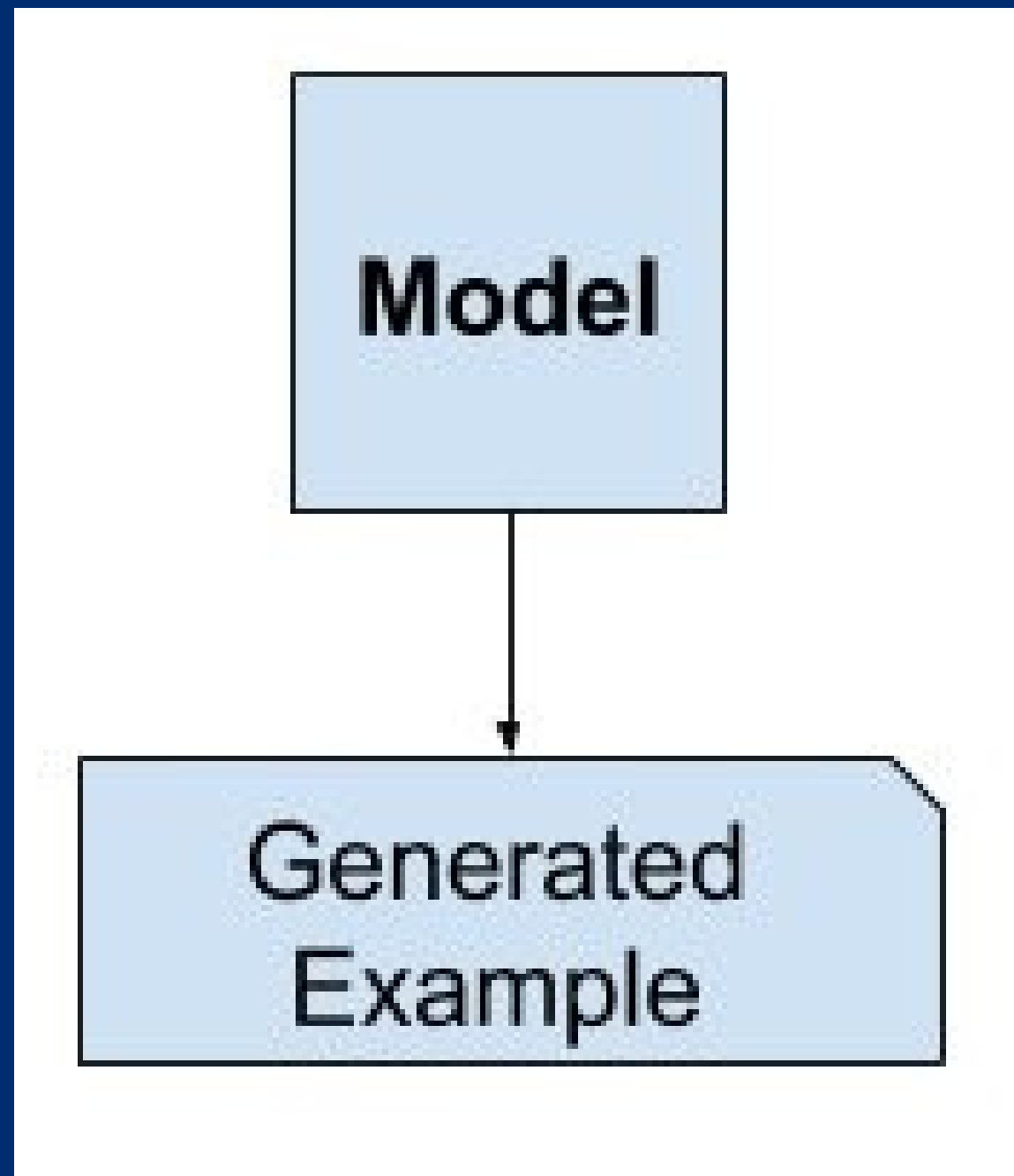# GANs
Generative Adversarial Networks

Himanshu

Ian Goodfellow

GANs are a model architecture for training a generative model, and it is most common to use deep learning models in this architecture.

The GAN architecture was first described in the 2014 paper by **Ian Goodfellow**, et al. titled "Generative Adversarial Networks."

GENERATIVE MODELING

A generative model could generate new photos of animals that look like real animals. GANs are just one kind of generative model.

A generative model includes the distribution of the data itself, and tells you how likely a given example is.

GAN Model Architecture

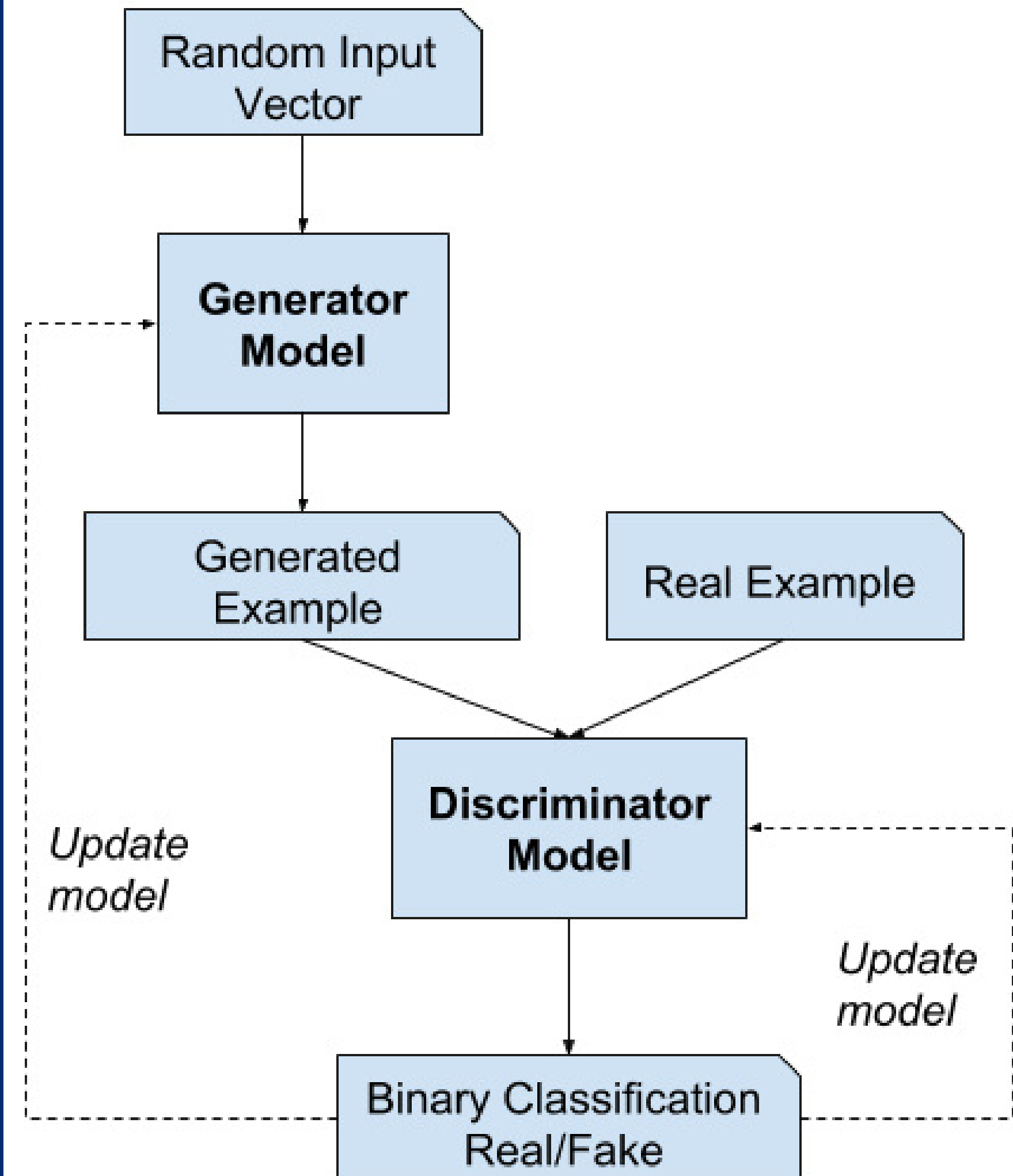Two Sub-Models

Generator

Discriminator

Generator generates new examples.

Discriminator classify examples as either real or fake.

The two models, the generator and discriminator, are trained together.

When the discriminator successfully identifies real and fake samples, it is rewarded.

Alternately, when the generator fools the discriminator, it is rewarded.

GENERATOR

"The Artist"
A neural network trying to create pictures of cats that look real.

GENERATOR

Thousands of real-world images labeled "CAT"

DISCRIMINATOR

"The Art Critic"
A neural network examining cat pictures to determine if they're real or fake.

DISCRIMINATOR

Realistic yet fictional portraits of celebrities generated from originals using GANs.