



GANs **Generative Adversarial Networks**

Himanshu

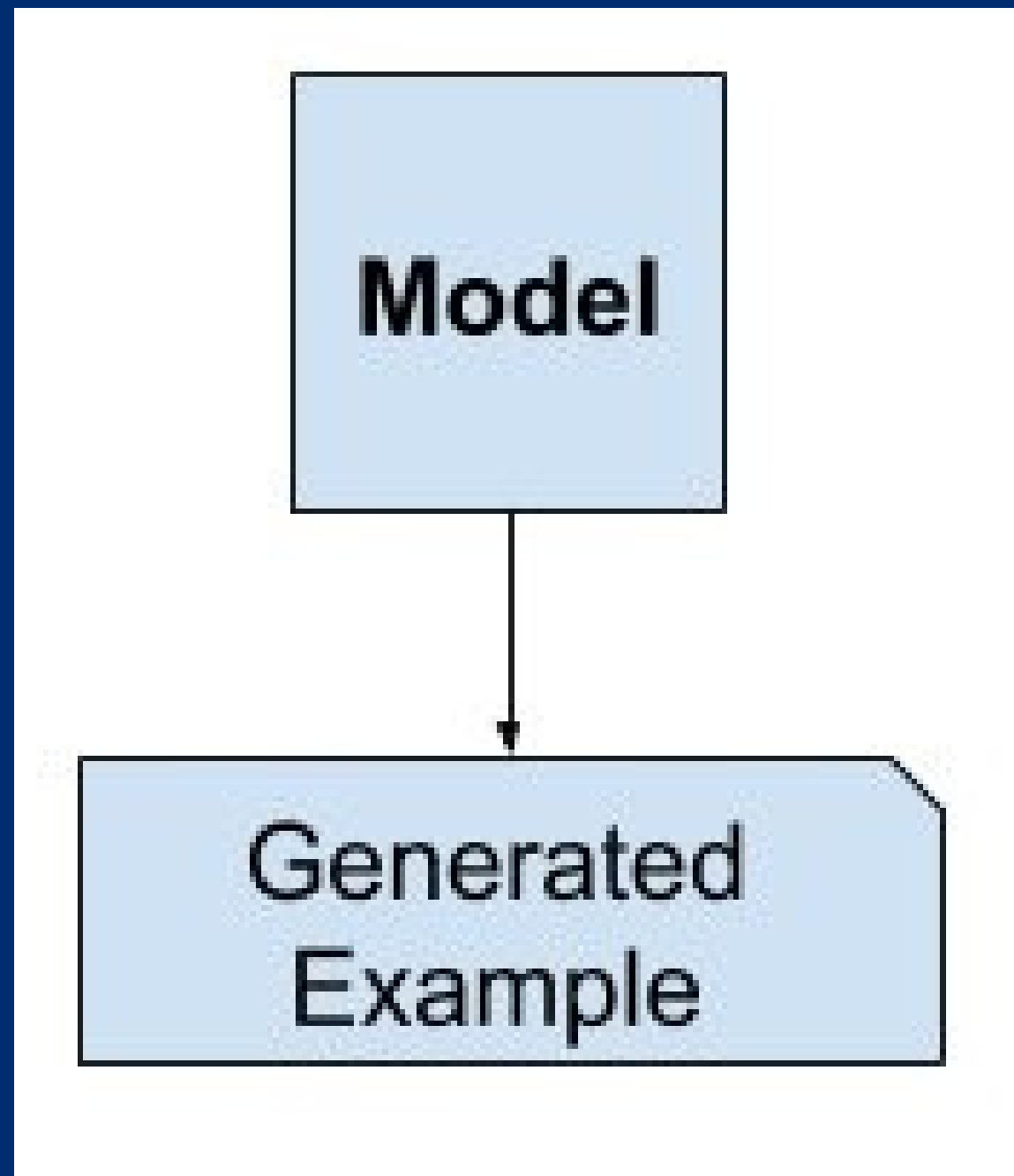


Ian Goodfellow

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

The diagram illustrates the GAN Model Architecture. It is divided into two main sections by a vertical line. The left section has a dark blue background and contains a light blue circle labeled 'Generator'. Below the circle, the text 'Generator generates new examples.' is written. The right section has a medium blue background and contains a dark blue circle labeled 'Discriminator'. Below the circle, the text 'Discriminator classify examples as either real or fake.' is written. A horizontal grey bar with rounded ends, containing the text 'Two Sub-Models', spans across the top of both sections.

Generator generates new examples.

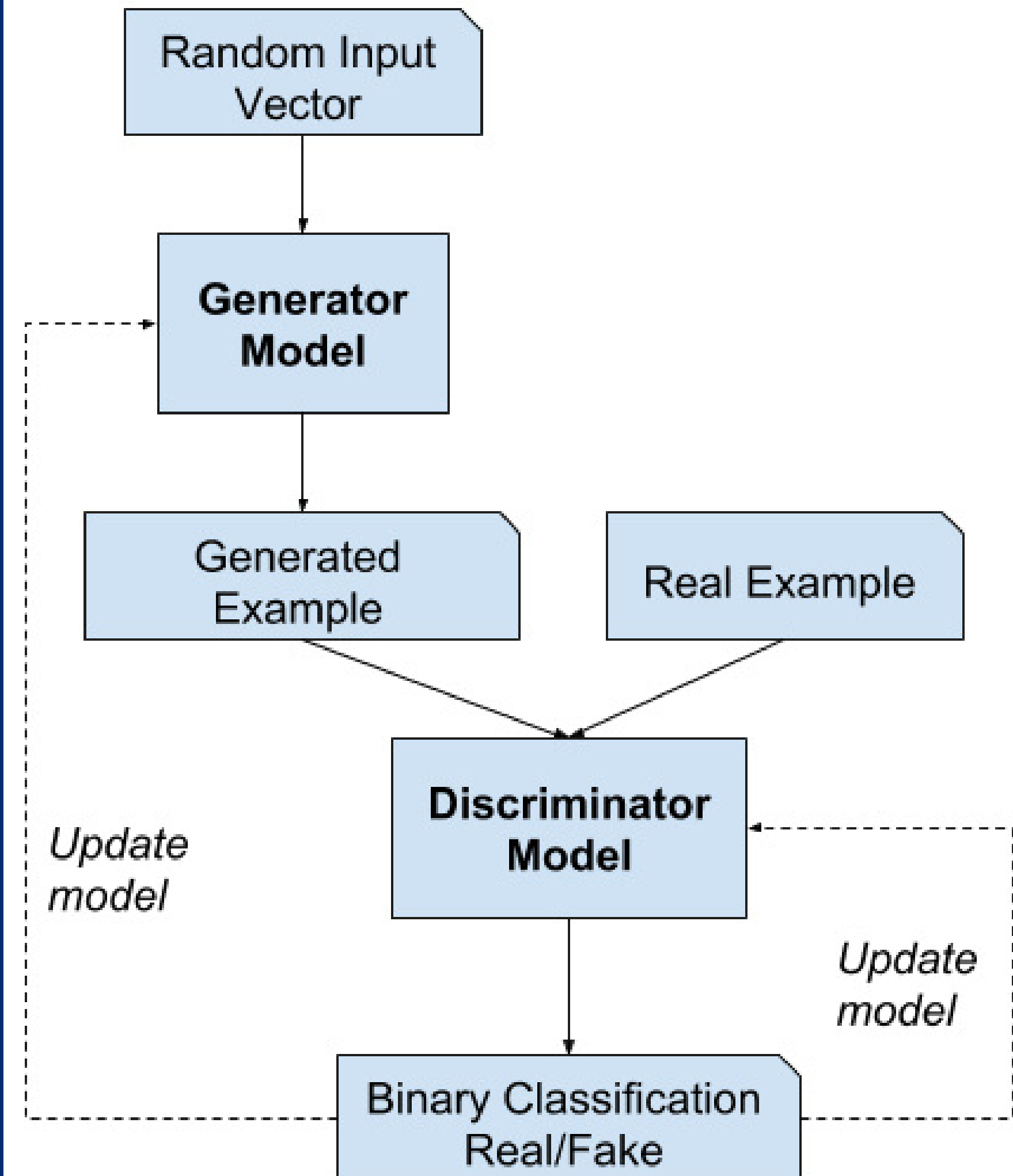
Discriminator

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

DISCRIMINATOR

"The Art Critic"

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



DISCRIMINATOR

Thousands of real-world images labeled "CAT"





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