

Generative adversarial network

Analogy



Customer



Wine



**Shop
Owner**



Analogy



Forger



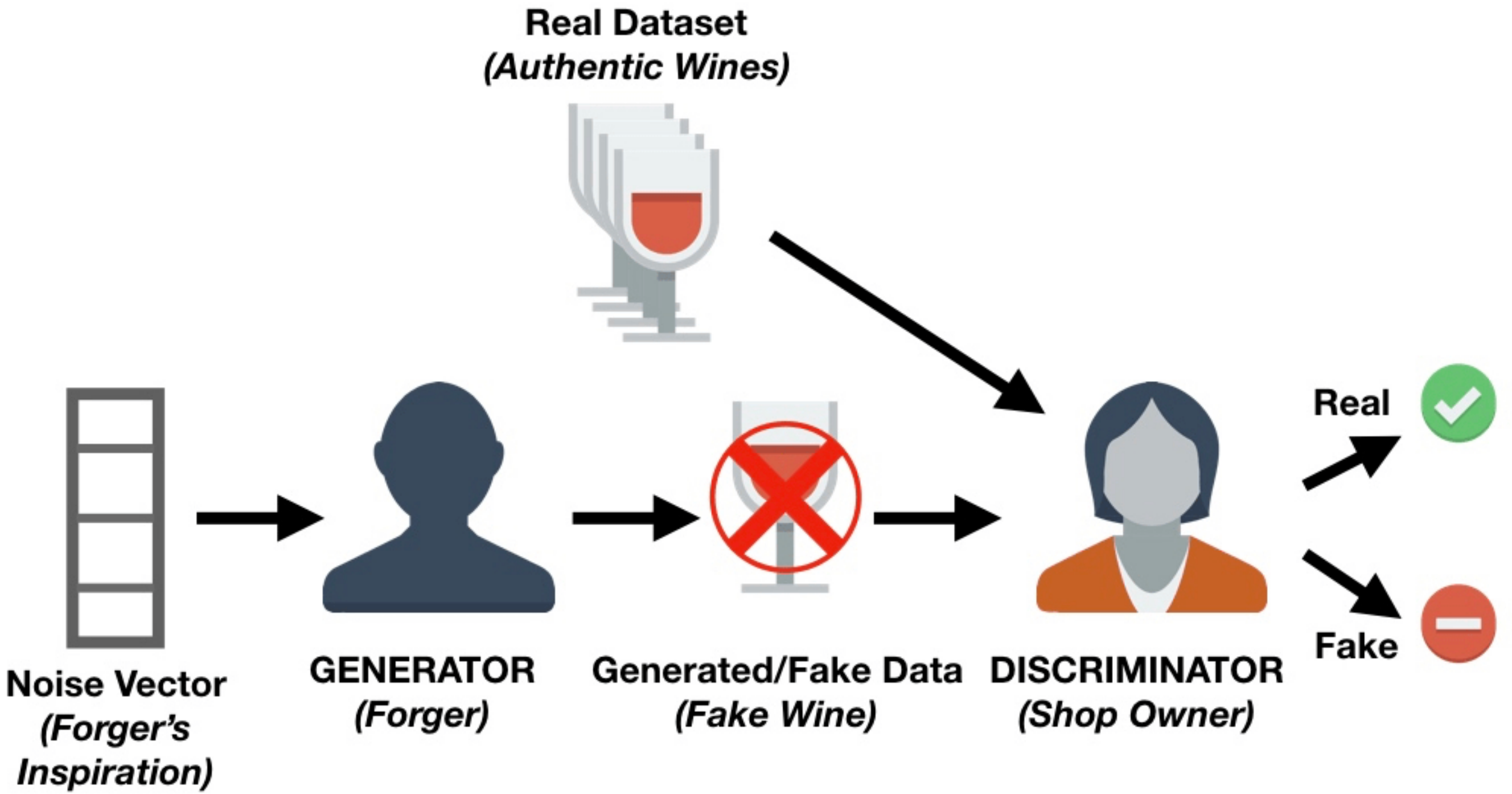
Fake Wine



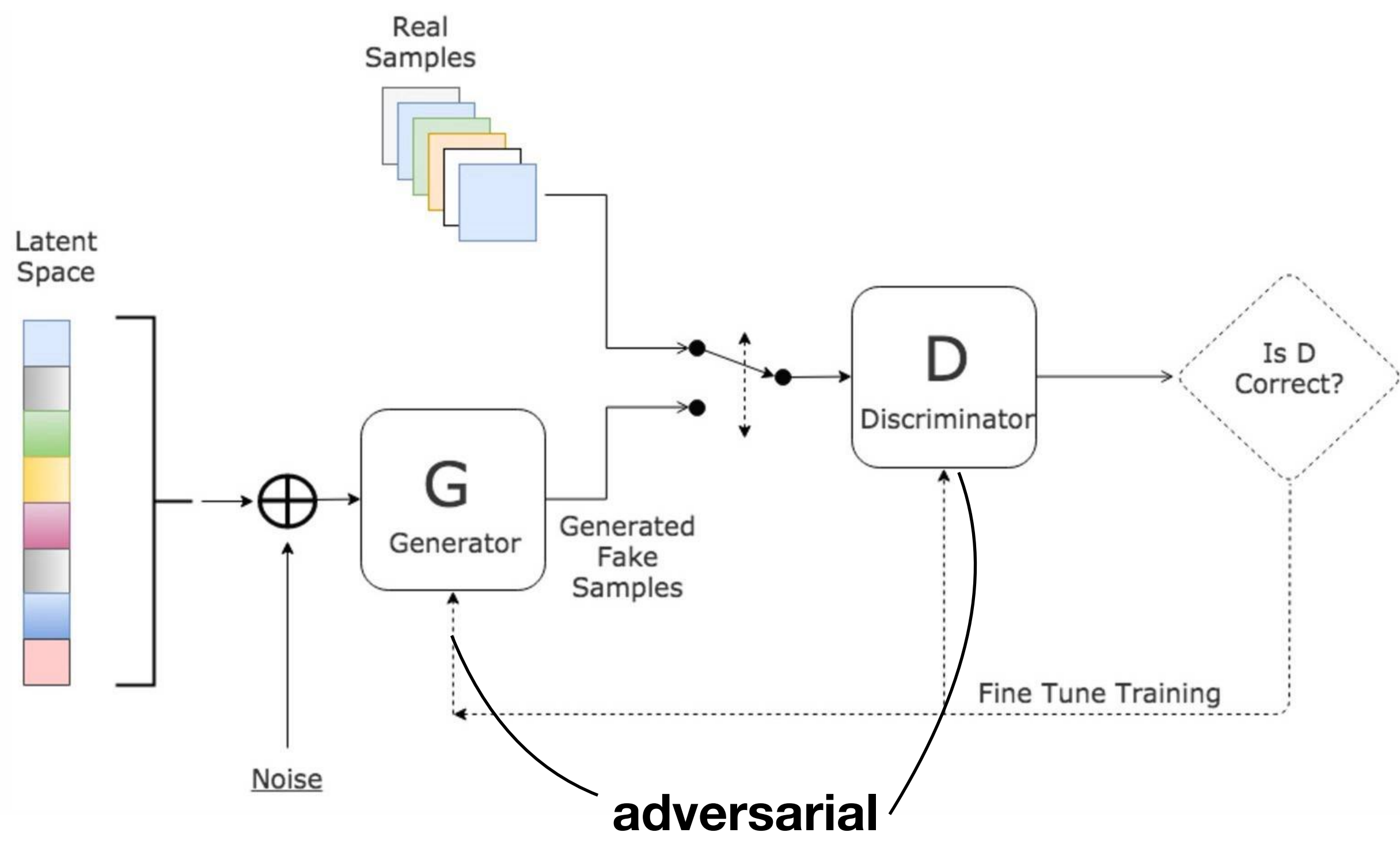
Shop
Owner



Analogy



Analogy



Steps to train a GAN

Step 1: Define the problem.

Step 2: Define architecture of GAN.

Step 3: Train Discriminator on real data for n epochs

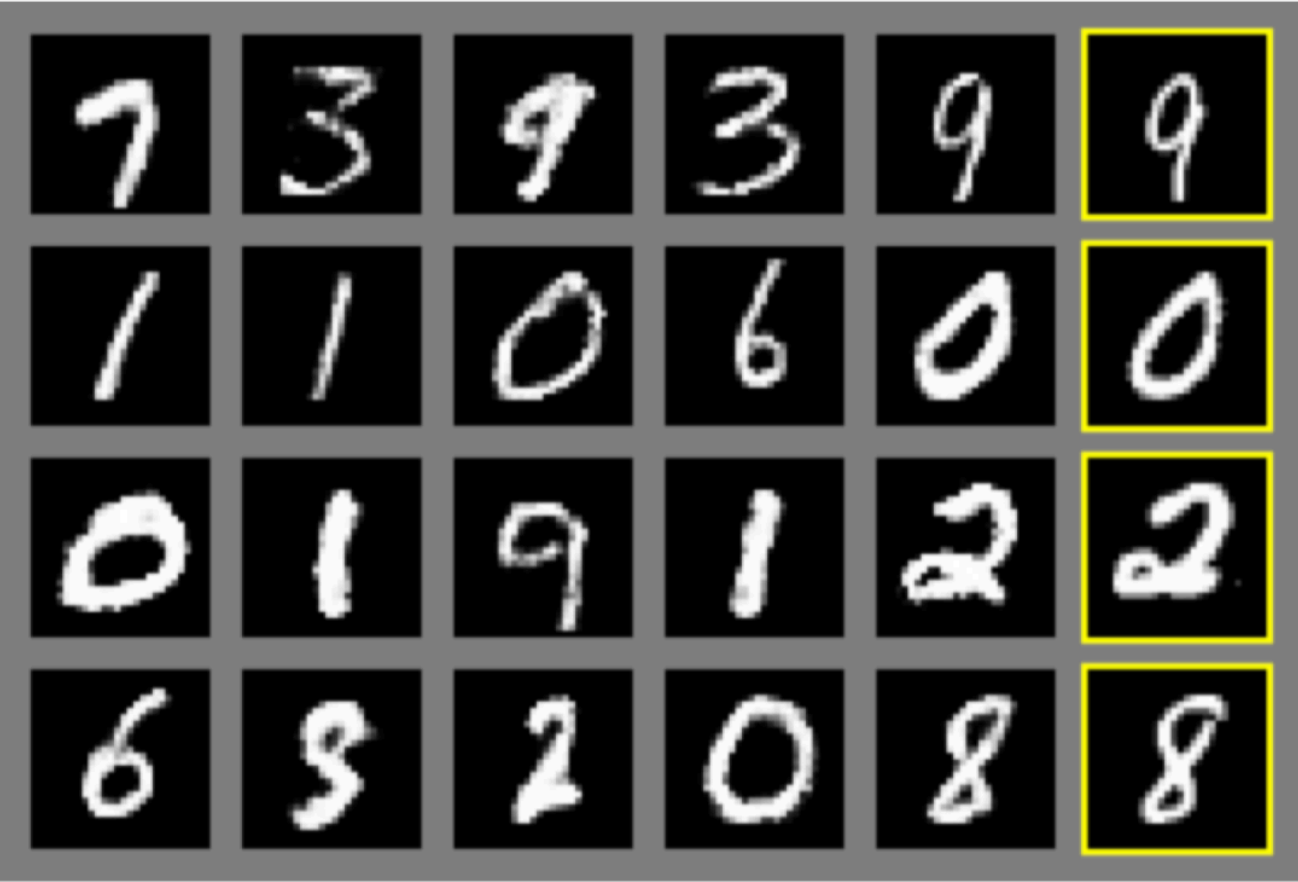
Step 4: Generate fake inputs for generator and train discriminator on fake data

Step 5: Train generator with the output of discriminator

Step 6: Repeat step 3 to step 5 for a few epochs.

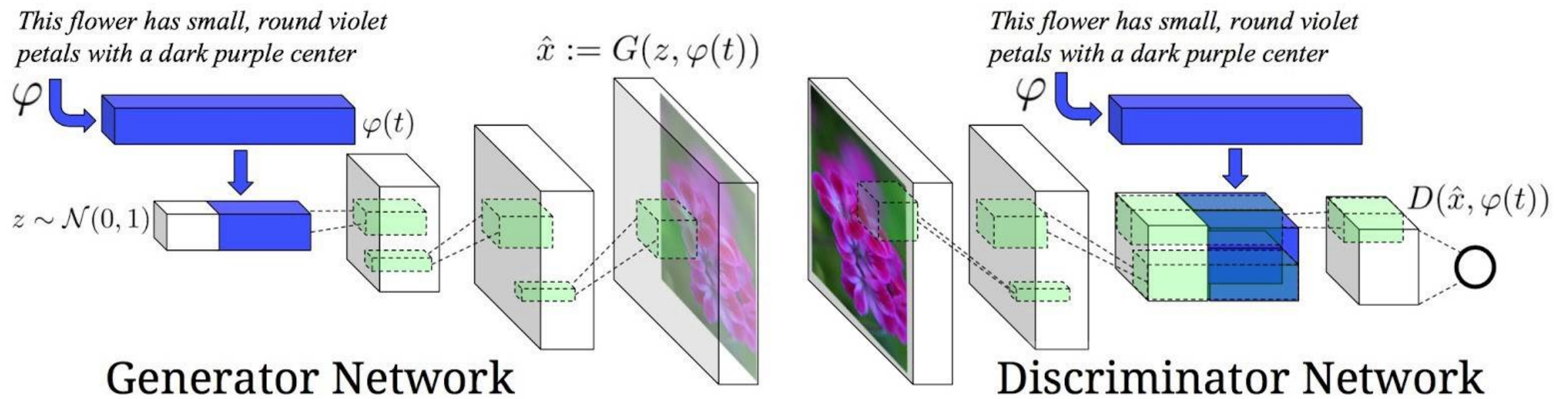
Step 7: Check if the fake data manually if it seems legit. If it seems appropriate, stop training, else go to step 3.

Natural image synthesis



Application

Text to image synthesis



"inverted" CNN

CNN

this small bird has a pink breast and crown, and black primaries and secondaries.



this magnificent fellow is almost all black with a red crest, and white cheek patch.



the flower has petals that are bright pinkish purple with white stigma



this white and yellow flower have thin white petals and a round yellow stamen



GANs allow a model to learn that there are many correct answers

Traits of GANS

Strong power to simulate

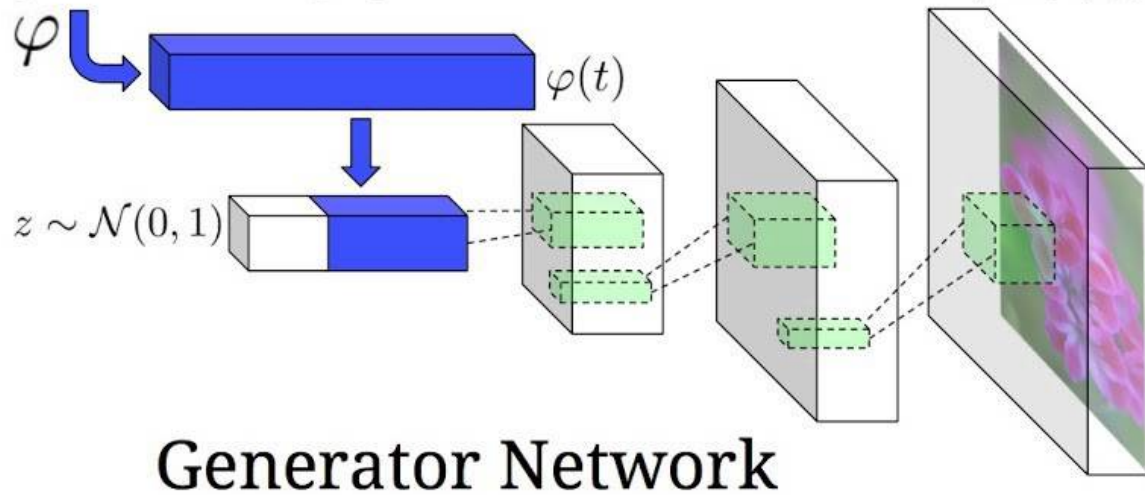
Account for uncertainty in the data

Fewer training data required

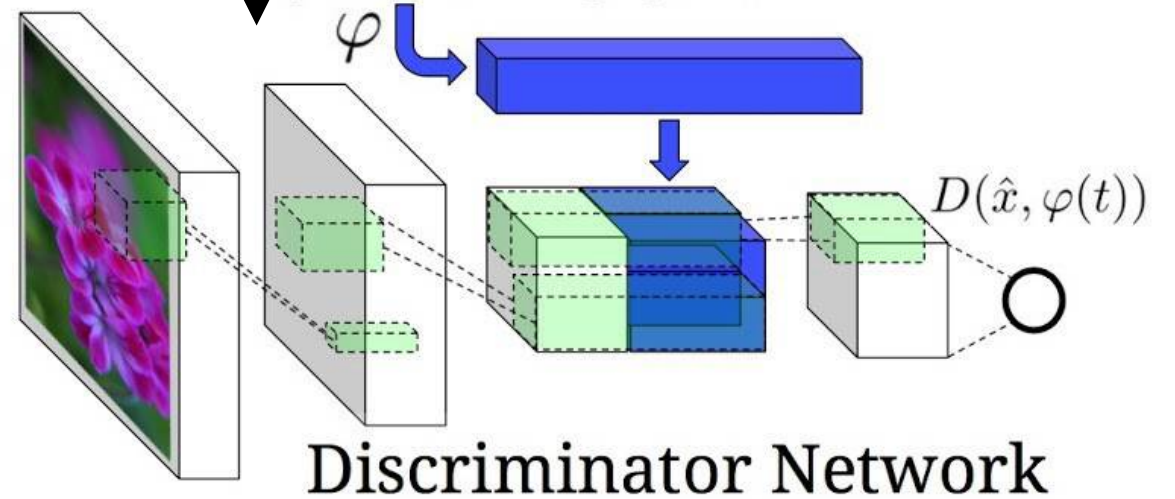
Training data: vague images

Description of organism

This flower has small, round violet petals with a dark purple center



This flower has small, round violet petals with a dark purple center



Thanks