~~CGAN Simpson Character Generator~~

~~CGAN Bird Generator~~

CGAN Shape Generator *(GANs are really hard)

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Attempt 1: Simpsons Character Generator

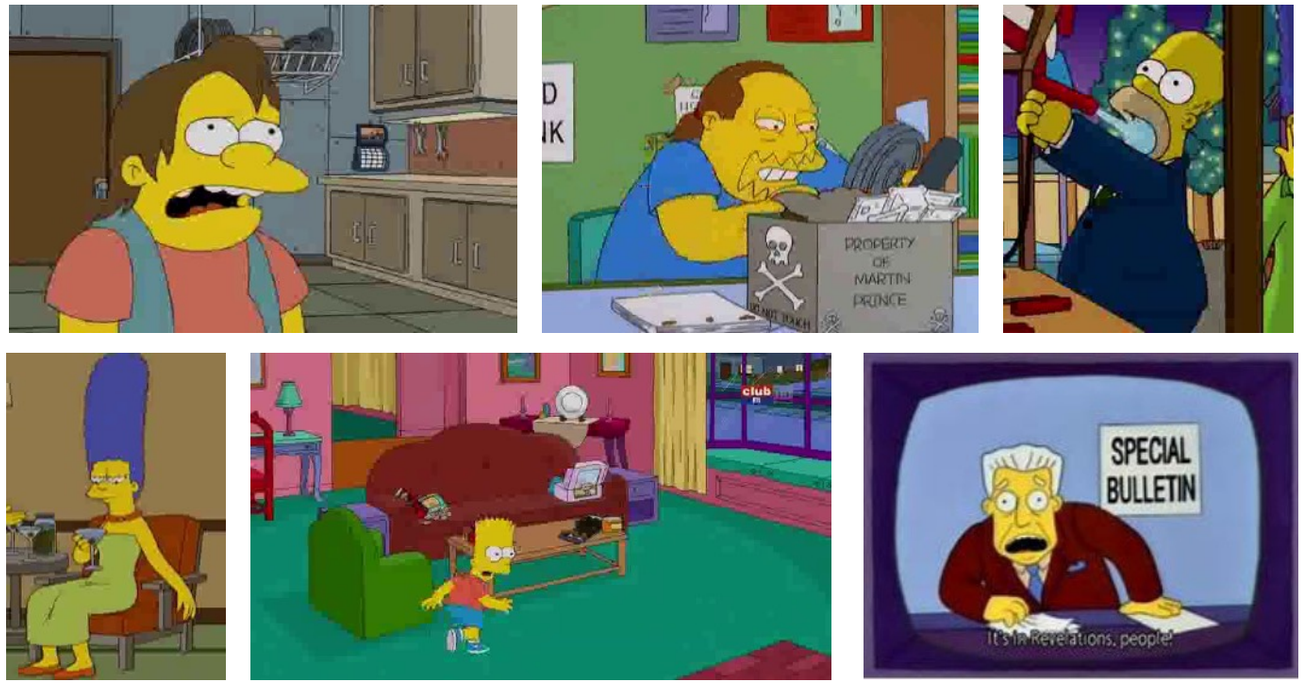
The Idea:
Use a conditioned GAN to train the coolest Simpson's character generator the world has ever seen.

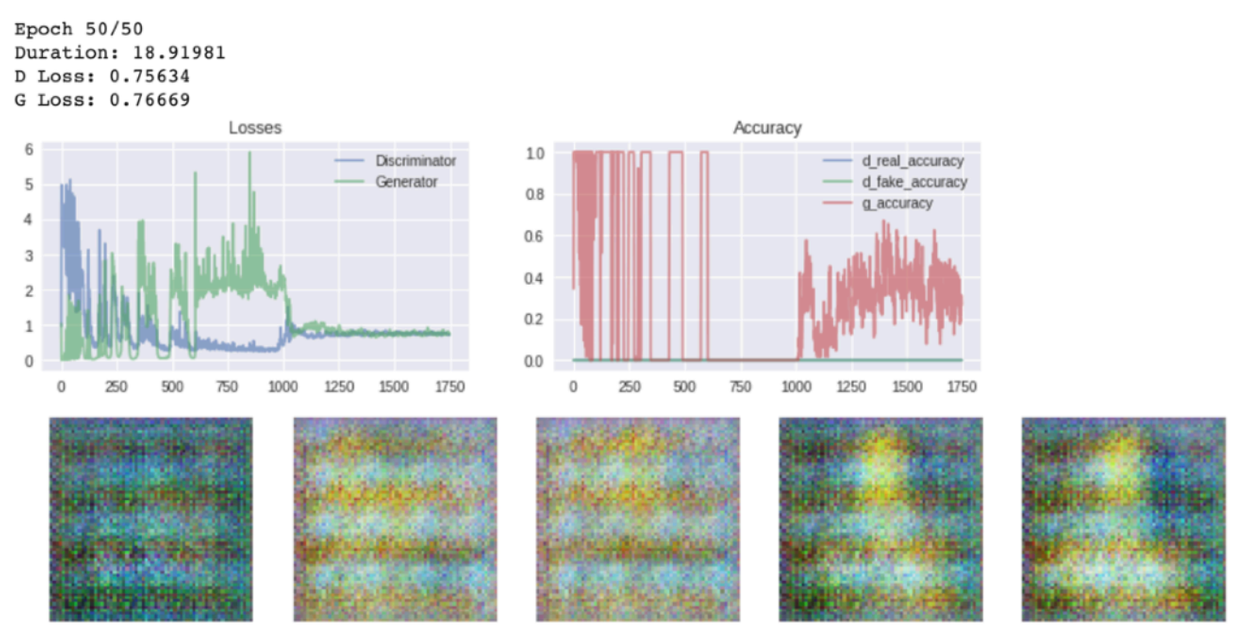
The Data:
Kaggle dataset with 7.5k labeled screenshots

Initial Test:
Train normal GAN on 'Homer' images

The Result:
Multicolored blobs. Very sensitive to hyper parameters

Hypothesis:
Images in dataset were not cropped to faces (like Assignment 4). Signal to noise ratio too low. Too challenging.





Attempt 2: Bird Generator

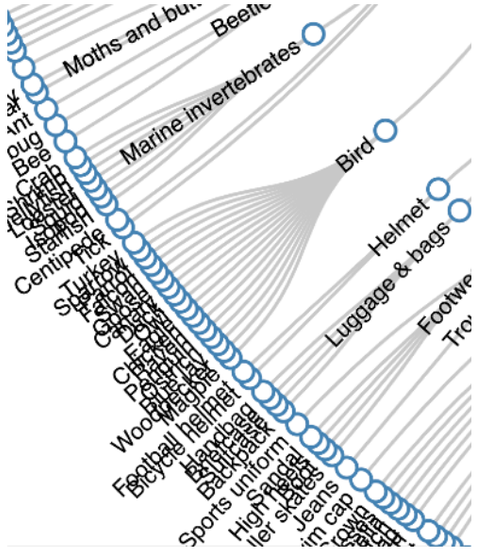
The Idea:
Use a dataset with bounding boxes to create cropped images (higher signal to noise ratio).

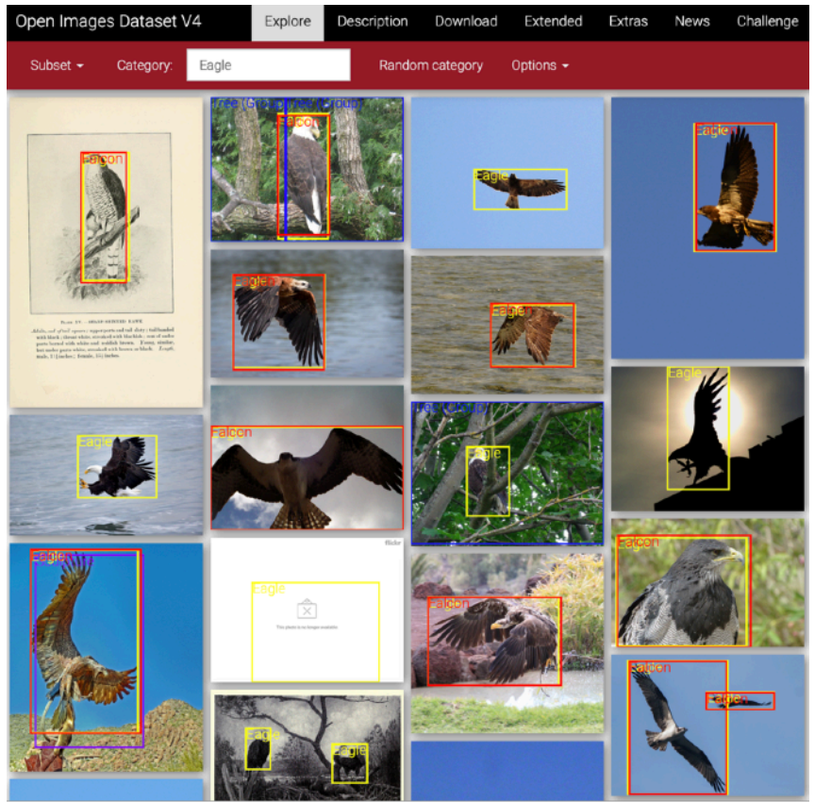
The Data:
Google Open Images V4 contains millions of labelled and bounded images. Use bird subset since images have simple backgrounds (mostly sky)

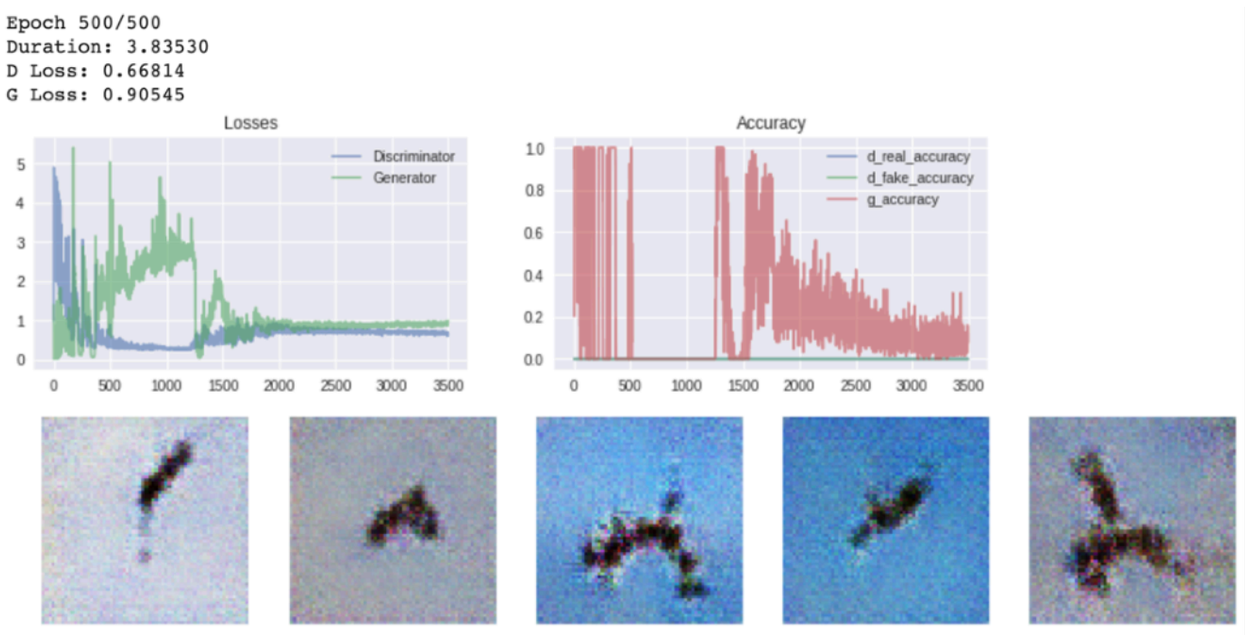
Initial Test:
Use only ‘eagle’ images in sky.

The Result:
Bird shaped blobs. Promising, but not enough detail to be able to differentiate bird types with full labeled data.

Hypothesis:
Still too challenging. Need dataset with clear differentiation between labels.







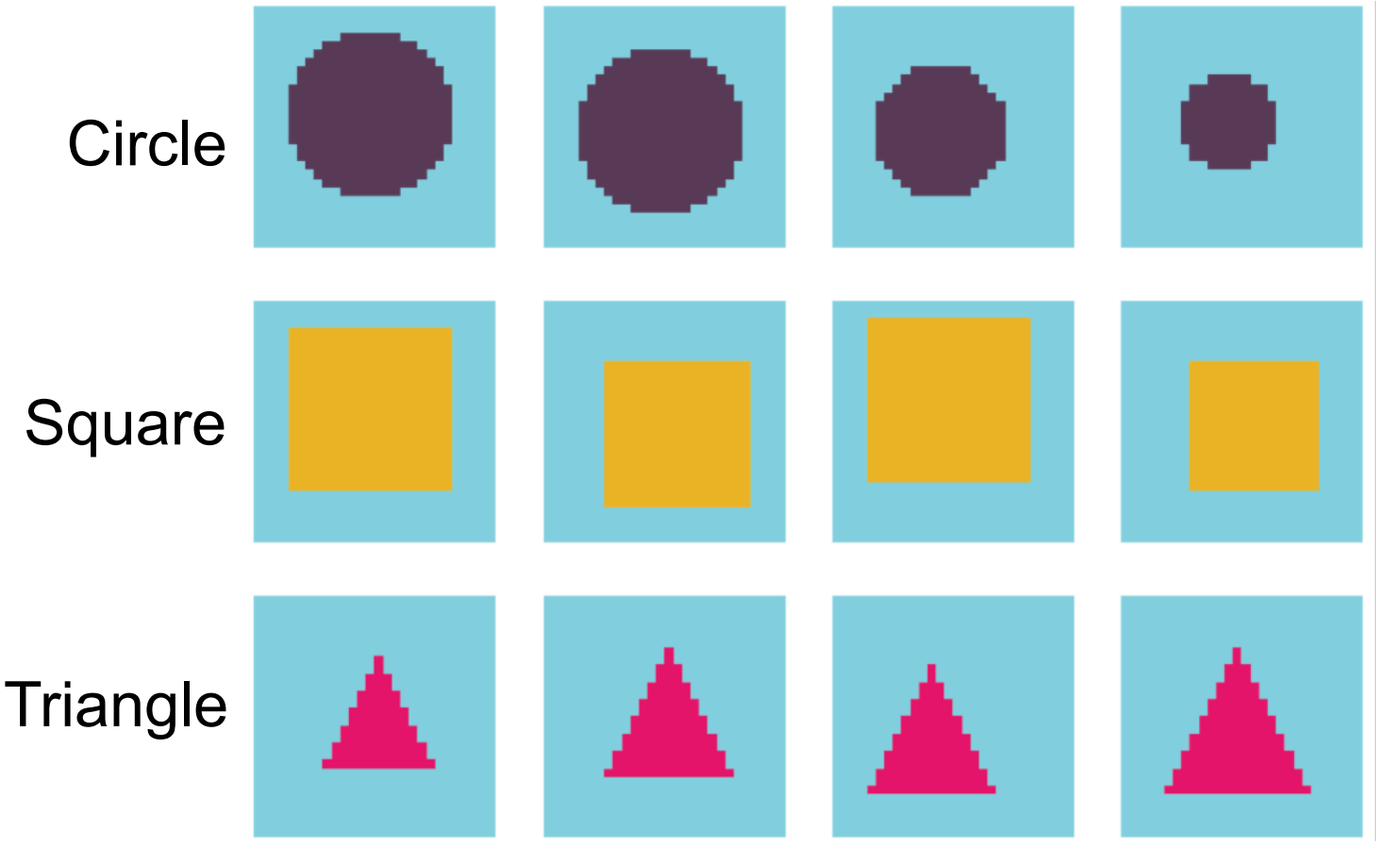
Attempt 3: Shape Generator

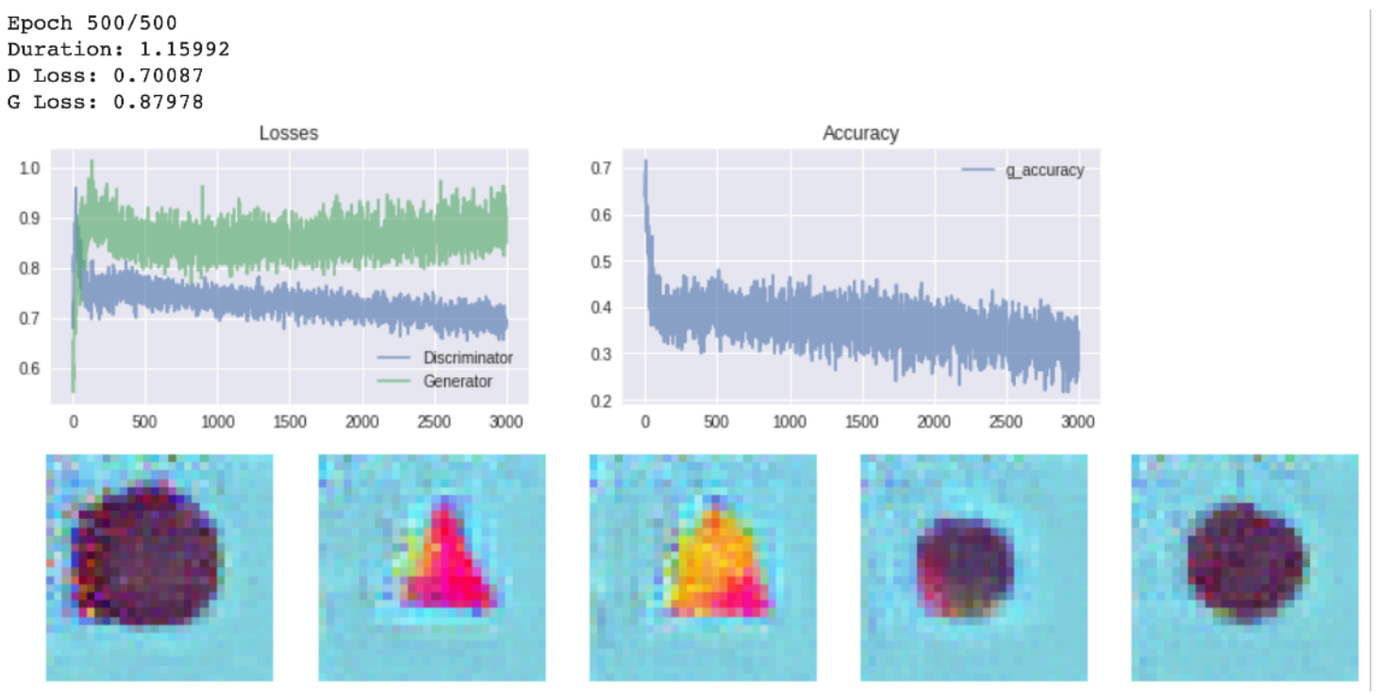
The Idea:
Build a generated dataset with easy distinctions between classes.

The Data:
Generated data with 3 shapes, 3 colours, and 1 background. Vary position and size of shapes. Generated 1500 images.

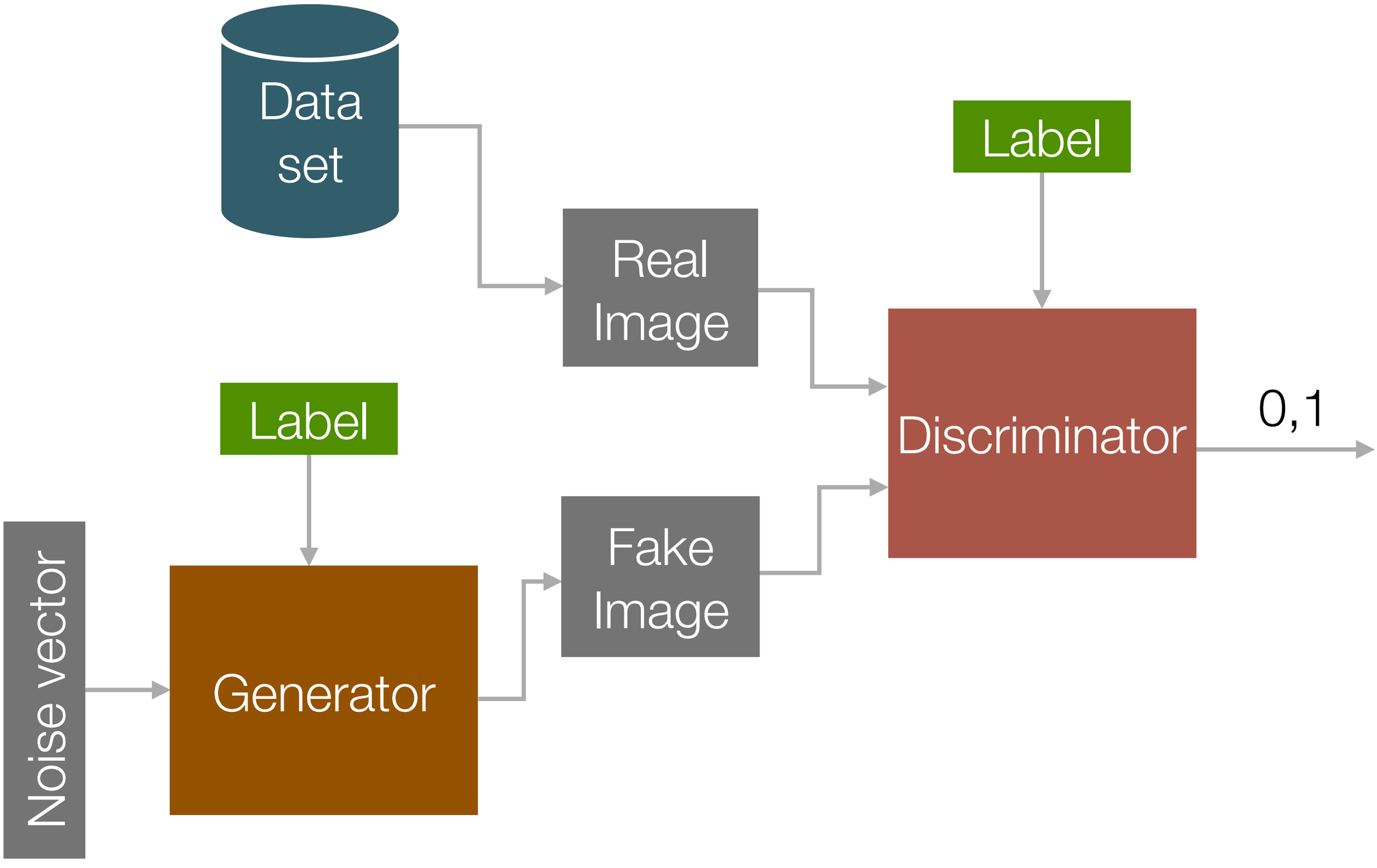
The Test:
Shrink GAN (<1M params). Shrink image size (28x28). Train GAN without labels and see if stable and fast to train (to allow for fast development cycles).

The Result:
Hope! Model learns background, shapes, and is starting to learn colour. Worth expanding to CGAN.

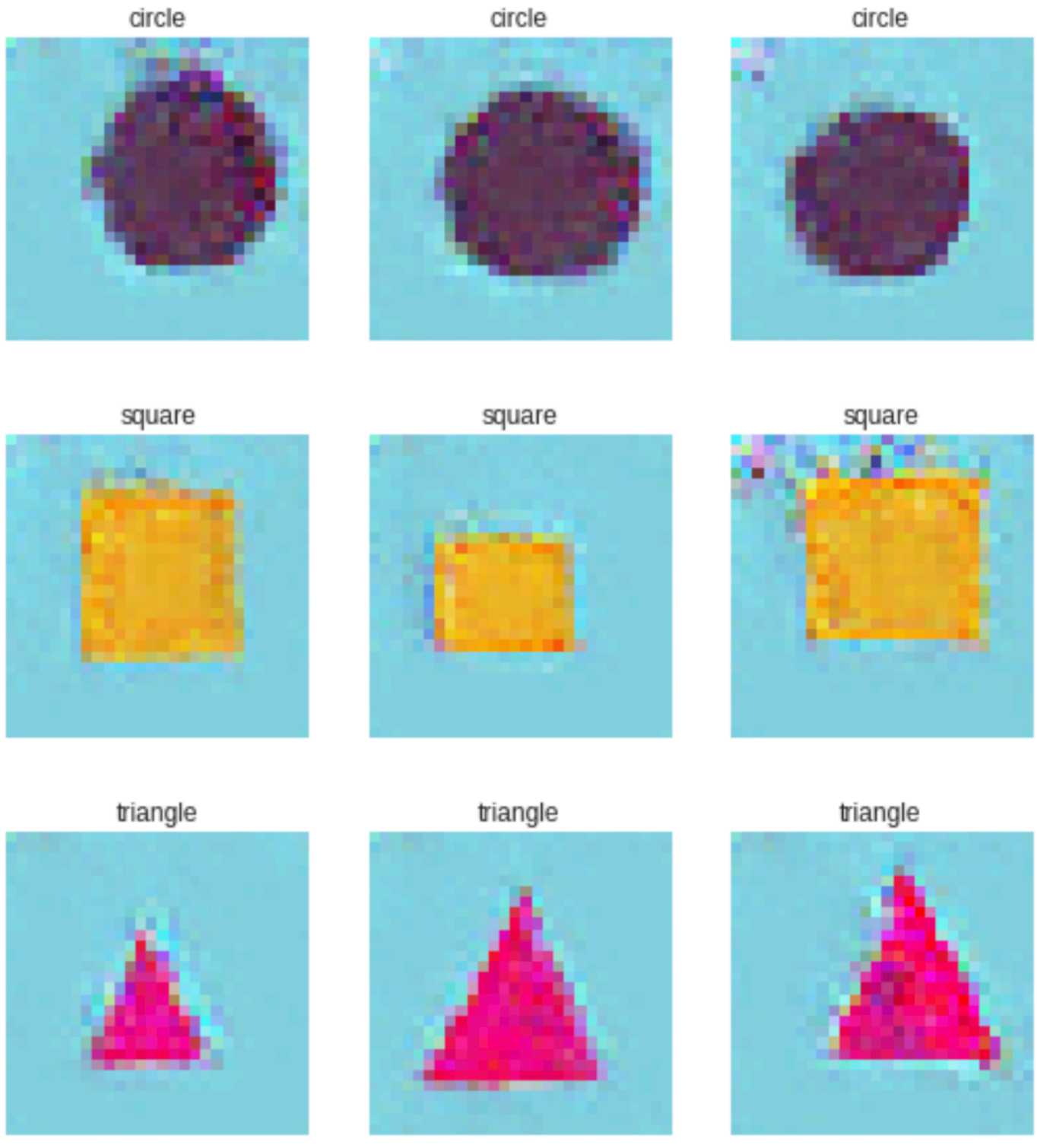




CGAN Architecture



Result: On demand fuzzy shapes!



1000 epochs