NO.1 | PORTFOLIO PROJECT

DCGAN_MNIST

DEEP CONVOLUTIONAL GENERATIVE
ADVERSARIAL NETWORK
DATA: DIGIT MNIST

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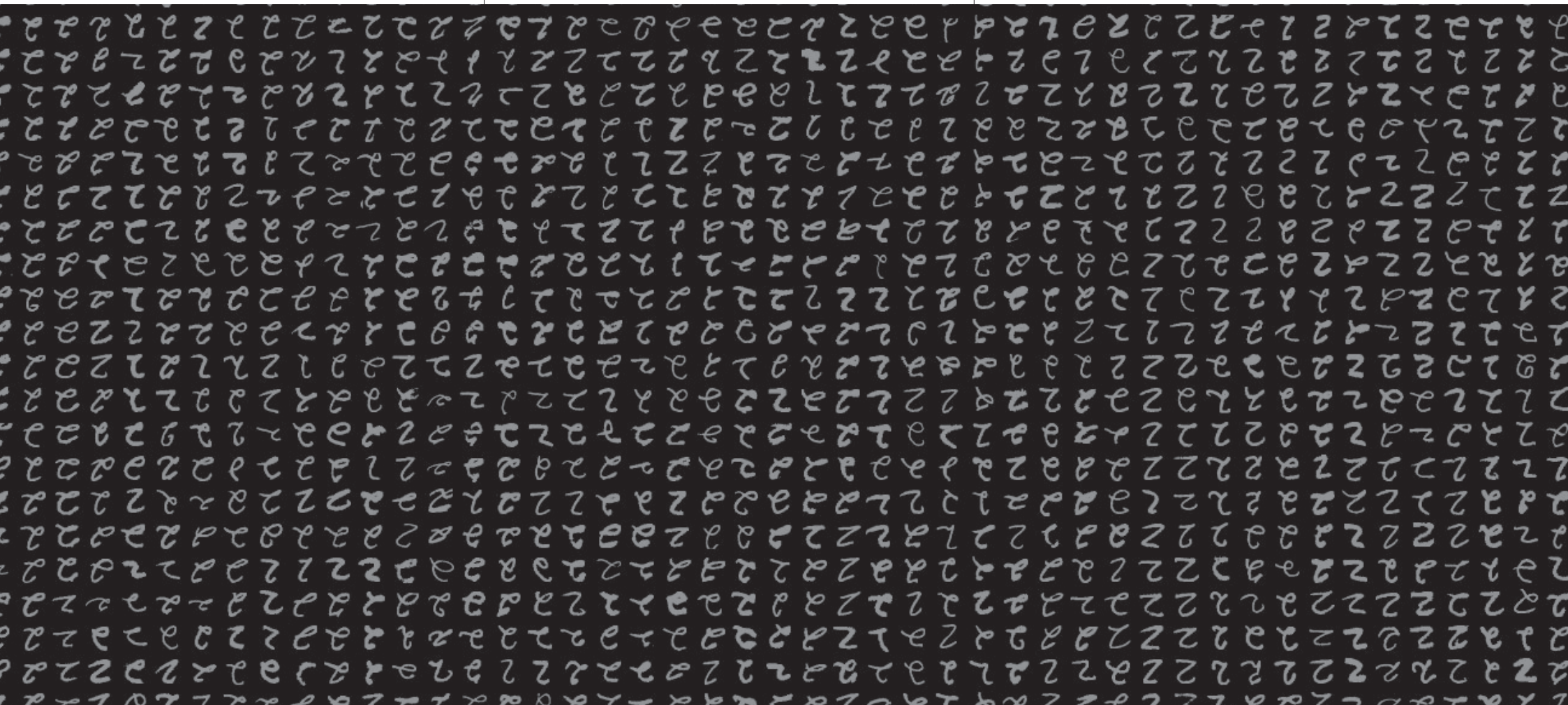
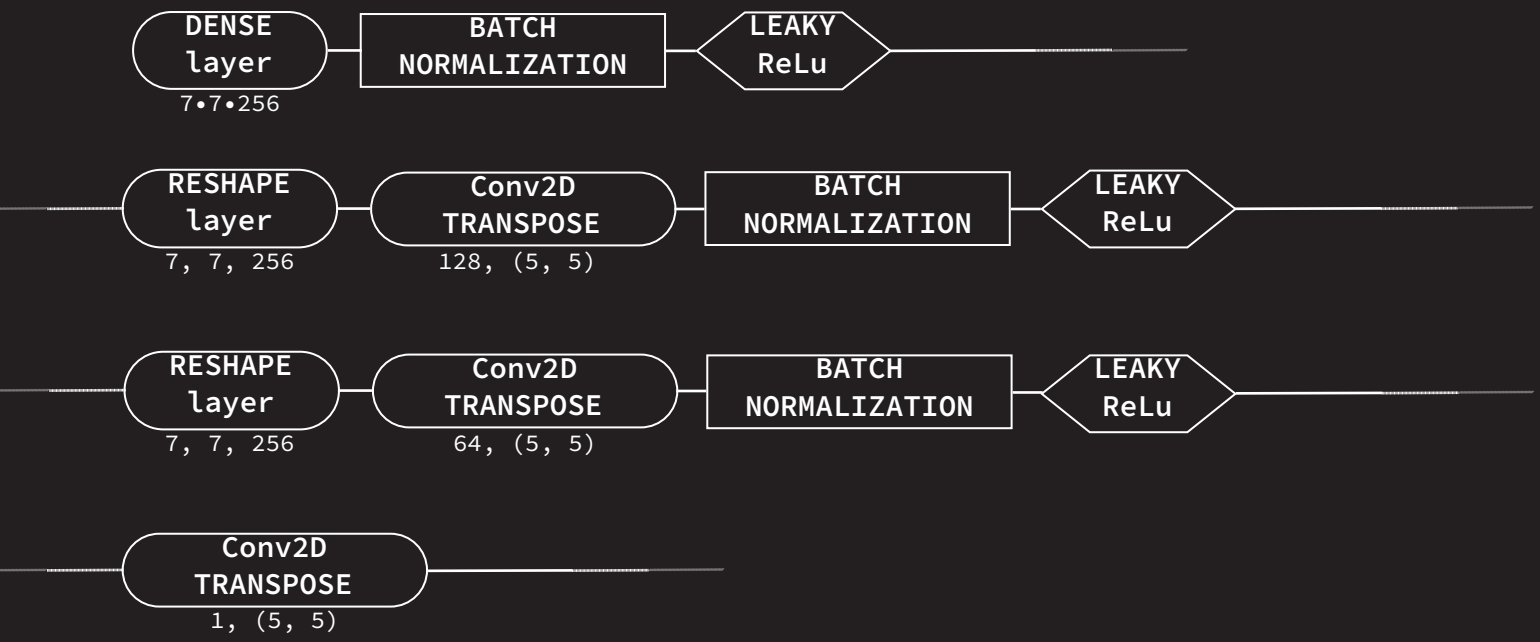
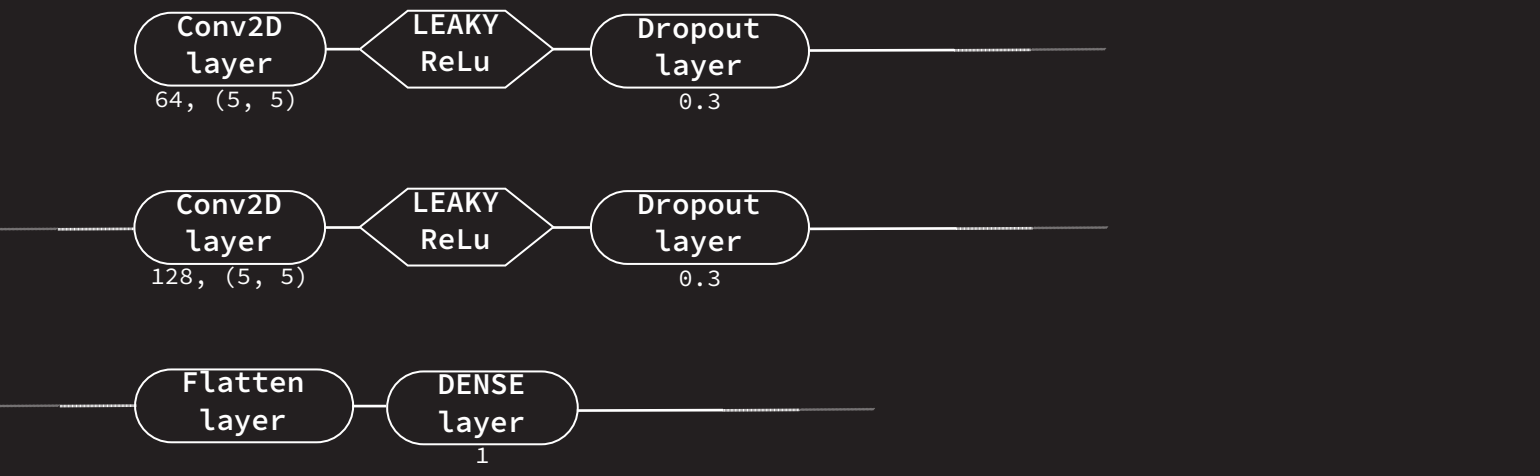


GENERATOR



DISCRIMINATOR



GAN RESULTS

As the first part of a GAN series of projects. The MNIST dataset is utilized for its usability, and its simplicity. More advanced applications of GANs will be explored.

Generative Adversarial Networks (GANs) are one of the most interesting ideas in computer science today. Having two models train simultaneously by an adversarial process, where the generator is trained to create images that represent the training data, and the discriminator is trained to examine the created images.

One can notice that the first attemps to generate accurate images are not feasable and or thus judged harshly by the discriminator model. This will progressively improve both the generator's and discrimintor's ability to create and determine the "fake" images.

This particular project is an example of the parametric category of image generating models, where a database of existing images is utilized for training and matching. To produce a stable deep convolutional GAN for the project, the well known core approach to a DCGAN architecture was adopted.

This architecture includes a convolutional net which replaces spatial pooling functions with strided convolutions. After this, batch normalization was used to stabalize training for the generator. Lastly, a leaky ReLu activation was called for every normalization and Conv2D layer. This allowed the model to learn, and cover the training color space distribution more quickly.