



# Paint Like Monet: Two-Objective Discriminator GAN to Mimic Monet's Painting Style

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## DATASET

- The dataset includes landscape photographs and pictures of Monet's paintings
- The discriminator determines the key characteristics of the Monet paintings to later implement in the generator
- The generator uses the landscape photographs to create a Monet-like filter over the image

## METHODS & EXPERIMENTAL DESIGN

- For the discriminator part of the GAN, we implemented a **Two-Objective Discriminator**
- Within this discriminator reside two functions:
  - **Real vs. Fake Discriminator:** distinguishes between real Monet pictures of paintings and fake images generated by the GAN's Generator
  - **Attribute/Class Discriminator:** discriminates between images of a certain style/attribute

## UPSAMPLING VS DOWNSAMPLING

- **Upsampling:** increasing the dimensions of a generated, Monet-like image
  - In the generator
- **Downsampling:** decreasing the dimensions of an image to extract features of the Monet paintings
  - In the discriminator

## ABSTRACT

- Using data science & GAN
- **GAN: Generative Adversarial Network**
- Learns from pictures of Monet's paintings in dataset
- Generates own pictures in Monet's style
- Combines learned attributes from Monet's work with landscape photographs in provided dataset

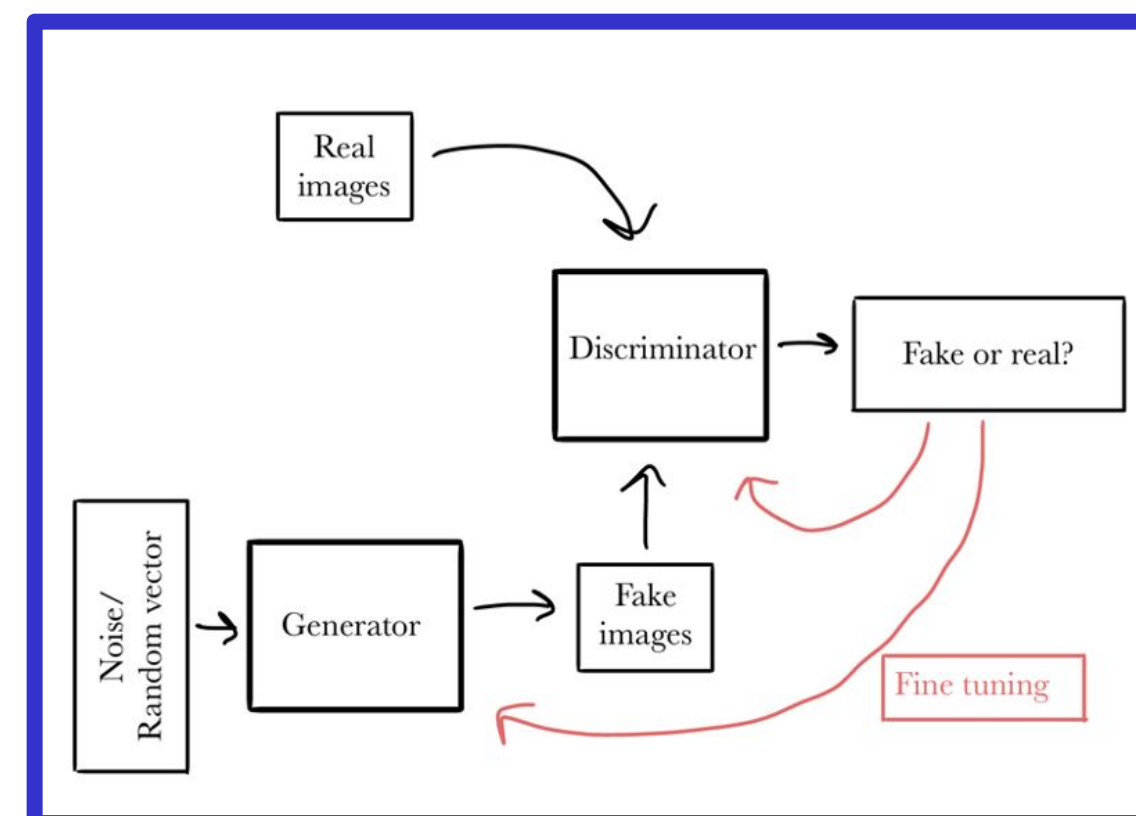
## BACKGROUND

- Kaggle Competition "I'm Somewhat of a Painter Myself"
- Develop AI network that mimics the famous painting style of Claude Monet
- Trying to bridge the gap between art and science

## WHAT'S A GAN?

### Generative Adversarial Network (GAN)

1. **Generator:** finds characteristics of Monet paintings that GAN will use to make own Monet-style images
  2. **Discriminator:** distinguishes between real and fake images
- Like an FBI agent working against an art forger; each network trains on each other



## RESULTS FROM KAGGLE PROJECT



Kumar, S. (2021, August 18). I'm somewhat of a painter myself. Kaggle. <https://www.kaggle.com/code/victorsullivan/i-m-something-of-a-painter-myself>  
victorsullivan, copied from UnfriendlyAI



## FUTURE WORK

Testing different optimizers and epoch numbers to quantify their effect on the processing power of the GAN and the quality of the generated pictures.