

# Generating Images in the Style of a Chosen Artist

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CS-770 Deep Learning

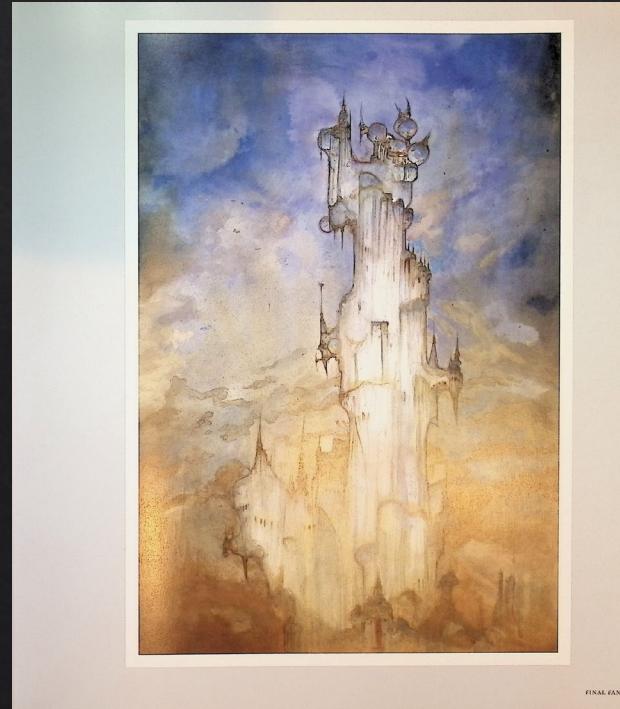
# The Artist

- ❖ Yoshitaka Amano
  - ❖ Japanese Artist
  - ❖ Has worked across all forms of media
- ❖ Style
  - ❖ Primarily Water Colour + B&W
  - ❖ Loose Details to Extremely Detailed Images
  - ❖ High-Fantasy and Techno Fantasy



# Gathering Training Data

- ❖ Scanned ~ 1000 pages from Various Art Books
- ❖ Scrapped Archival & Fan Sites (Google, Tumblr, Imgur)



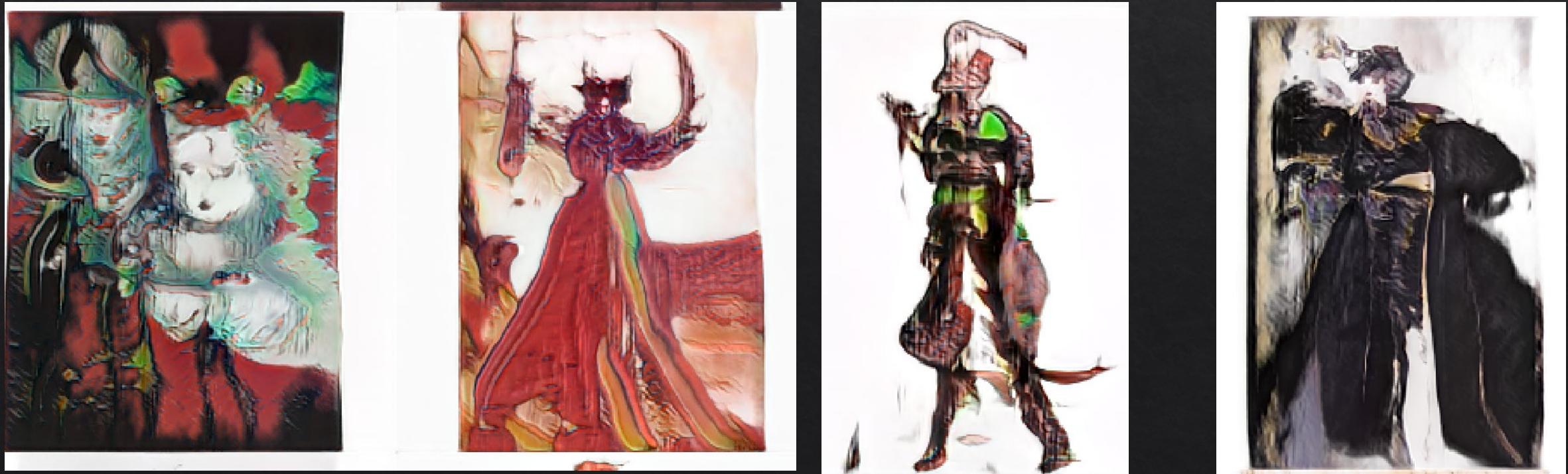
# Challenges

- ❖ Limited Training Data for a GAN
- ❖ Varied Art Styles
  - ❖ Limited training data across different styles led to confused images
- ❖ Physical Scan Quality
  - ❖ Glare, Colour Distortion, Multiple Drawings per Page
- ❖ Few Archives Existed (No Complete Archive)
  - ❖ Some Sources were unusable because of drastic stylistic differences
- ❖ Excessive Training Times

# Implementation

- ❖ Based on Nvidia's StyleGAN2 Architecture specifically for ADA
  - ❖ Adaptive Discriminator Augmentation
- ❖ Allows for smaller training sets to be converted into larger training sets
- ❖ Using Pytorch Created a GAN + pseudo-ADA through image transformations
- ❖ Ran Multiple Iterations

# Best Results



# Further Improvements

- ❖ Increase Scan Quality
- ❖ Separate Scanned Images to 1 Drawing per Image
- ❖ Larger Networks w/ more convolutions
- ❖ Limit ADA Transforms to most effective
- ❖ Automated Hyperparameter Tuning
- ❖ Cloud Compute Time

