M2 Applications of Machine Learning

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Contents

Using a Diffusion Model on the MNIST Dataset

Chapter 1

Training a Diffusion Model

1.1 Regular Denoising Diffusion Probabilistic Model (DDPM)

Describe this model and the training algorithm.

1.2 Training the Model on the MNIST Dataset

Describe the training process and the results. FID and IS scores.

1.3 Fine-Tuning the Model

2 different sets of hyperparams, compare results, both good and bad samples from the model.

Chapter 2

Custom Degradation Function

As mentioned in section 1.1, degreadation function is blablabla. In Bansal et al. blablabla.

2.1   A ... degradation function

Describe the custom degradation function.

2.2   Training the modified model on the MNIST dataset

Train model with degradation function and discuss results.

2.3   Comparing with the original model

Evaluate the fidelity of the samples generated by the two models, discussing any differences between them.