

Generative Models Ex 1 NICE

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Abstract

This report presents the results of the NICE flow model, trained on MNIST and Fashion-MNIST datasets using additive and affine coupling layers. The focus of this report is on the visual evaluation of the model's performance, including generated samples and log-likelihood plots over the course of training.

1 Introduction

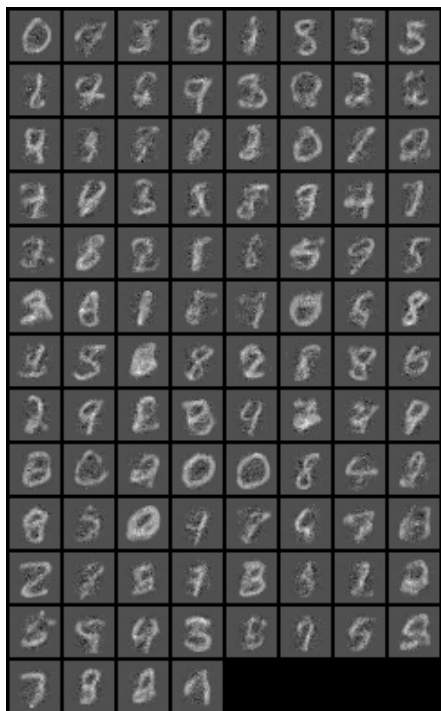
The NICE flow model is a generative model that learns to transform a simple distribution into a complex one using a series of reversible transformations. In this project, we implement and train the model with additive and affine coupling layers. The MNIST and Fashion-MNIST datasets are used for evaluation, and results are presented in terms of generated samples and log-likelihood metrics over 50 epochs.

2 Results

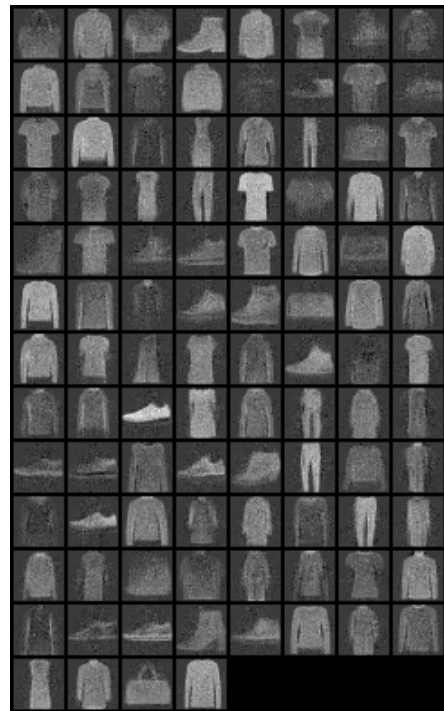
The primary focus of this report is to present the results obtained during the training process, including the generated samples and the evolution of the log-likelihood over epochs.

2.1 Generated Samples

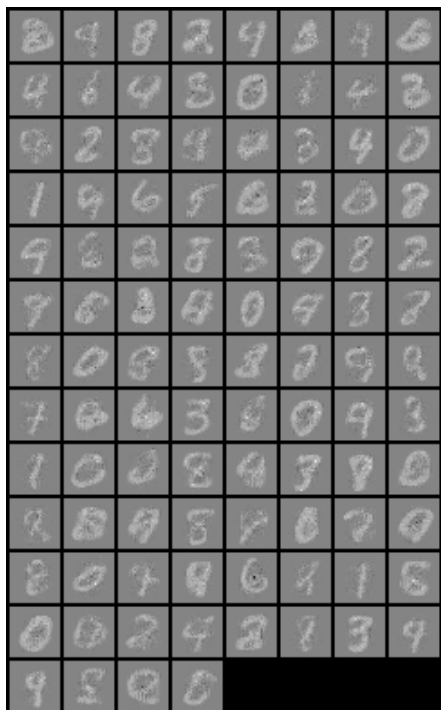
Figure 1 displays the generated samples from the model after 50 epochs of training. The results are shown for both MNIST and Fashion-MNIST datasets, using additive and affine coupling layers. These samples illustrate the ability of the model to generate meaningful images from the learned distribution.



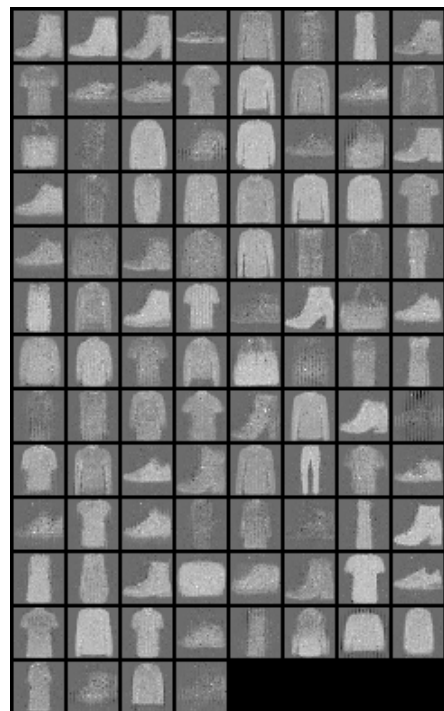
(a) MNIST (Additive Coupling)



(b) Fashion-MNIST (Additive Coupling)



(c) MNIST (Affine Coupling)

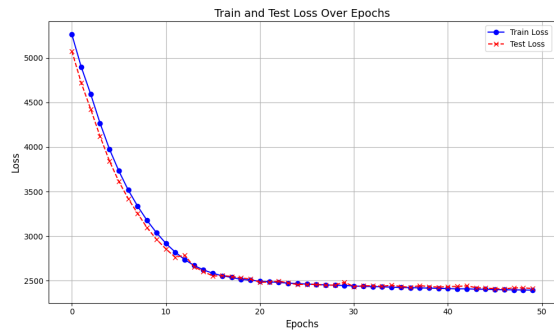


(d) Fashion-MNIST (Affine Coupling)

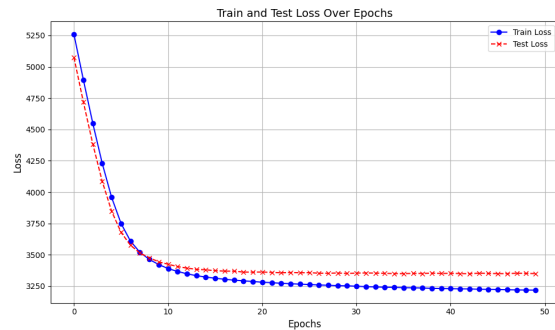
Figure 1: Generated samples after 50 epochs of training on MNIST and Fashion-MNIST.

2.2 Training and Test Log-Likelihood

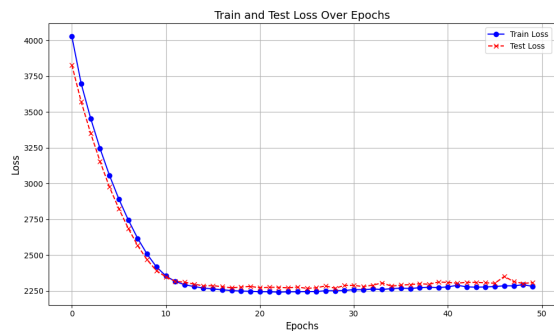
The following figures show the train and test log-likelihoods over epochs for both the MNIST and Fashion-MNIST datasets, using additive and affine coupling layers.



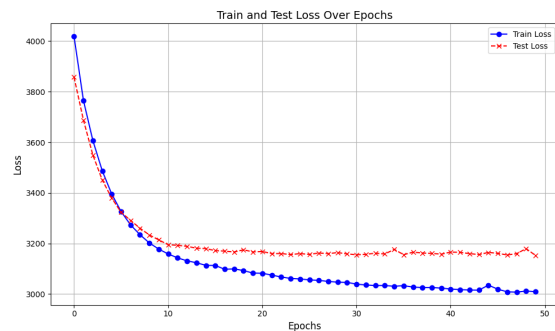
(a) MNIST (Additive Coupling)



(b) Fashion-MNIST (Additive Coupling)



(c) MNIST (Affine Coupling)



(d) Fashion-MNIST (Affine Coupling)

Figure 2: Train and test log-likelihood over epochs for MNIST and Fashion-MNIST with additive and affine coupling.