BML Project: Learning Priors for Adversarial Autoencoders
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Abstract

This work is a reproducing of the [1].

Most deep latent factor models choose simple priors for simplicity, tractability or not knowing what prior to use. Recent studies show that the choice of the prior may have a profound effect on the expressiveness of the model, especially when its generative network has limited capacity. In this paper, we propose to learn a proper prior from data for adversarial autoencoders (AAEs). We introduce the notion of code generators to transform manually selected simple priors into ones that can better characterize the data distribution. Experimental results show that the proposed model can generate better image quality and learn better disentangled representations than AAEs in both supervised and unsupervised settings. Lastly, we present its ability to do cross-domain translation in a text-to-image synthesis task.

Problem Statement

We decided to reproduce the following:

- Unsupervised images generation
- Supervised images generation

Data

The Datasets used:

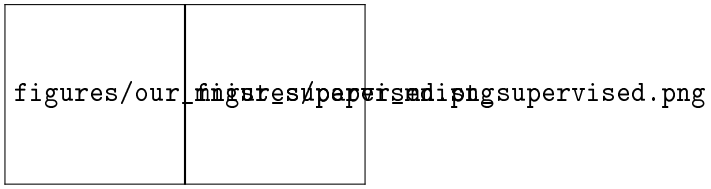
- MNIST
- CIFAR-10

Results

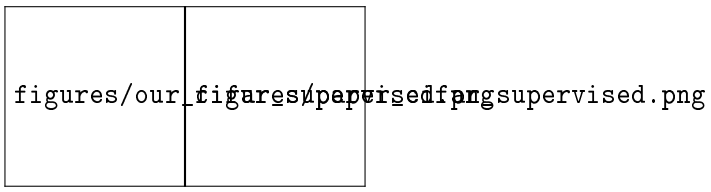
- Usupervised images generation

Dataset	Model	Inception score
MNIST	Our	??
	Original Paper	Unknown
CIFAR	Our	??
	Original Paper	6.52

- Supervised images generation



(a) MNIST



(b) CIFAR

Figure 1: Results for supervised learning the different datasets

Contribution

- Belozerova Polina: reading papers, ...
- Safin Alexander: reading papers, ...
- Pavlovskaia Natalia: reading papers, code for training procedure, images generation

References

[1] Learning priors for adversarial autoencoders. 2018.