

Programming Assignment 2

Due date: Dec 28th

- You will implement a VAE model. The layers of the encoder and decoder and specified in the given code. The distribution on the latent space is Gaussian (both prior and posterior) with $\mathcal{N}(0, I)$ prior. KL divergence loss can be computed analytically (see HW1).
- $p(x|z)$ will be a Bernoulli and the loss will be Binary cross entropy.

$$\log(p(x|z)) = \sum_i x_i \log(f(z)_i) + (1 - x_i) \log(1 - f(z)_i) \quad (1)$$

This is not exactly ok (but there are some justifications) as this is legitimate when $x \in \{0, 1\}$ not $x \in [0, 1]$ but it is common in the community so we will go with the standard implementation.

- Implement and run on MNIST and Fashion-MNIST for 50 epochs (results should be lower then the paper)
- You are given a template code that you need to fill in with the missing pieces. You need to submit the filled in code
- You also need to submit plots with train and test ELBO for each epoch for both datasets. In addition submit the sampled images from your model at the end of training.