CVAE Notes

March 15, 2021

1   VAE Objective

Recall the VAE objective:

$$\log P(X) - D_{KL}\big[Q(Z|X)||P(Z|X)\big] = \mathbb{E}\big[\log P(X|Z)\big] - D_{KL}\big[Q(Z|X)||P(Z)\big]$$

2   CVAE

To be able to select what class to generate, we can condition the model on a selected target class expressed by the term c.

$$\log P(X|C) - D_{KL}\big[Q(Z|X,C)||P(Z|X,C)\big] = \mathbb{E}\big[\log P(X|Z,C)\big] - D_{KL}\big[Q(Z|X,C)||P(Z|C)\big]$$