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Paper Summaries

Some Joke About VAEs

Written @ Corti

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Abstract

This was written for me to understand papers in my thesis better. Don't be alarmed if you don't understand it 100%, I probably don't either.

Contents

Table 1: Overview of the different definitions in the VAE

Distribution	Equation
Generative model	$p(\mathbf{x}) = p_\theta(\mathbf{x}|\mathbf{z})p_\theta(\mathbf{z})$
Prior over $\mathbf{z}$	$p_\theta(\mathbf{z})$
Likelihood over $\mathbf{x}$	$p_\theta(\mathbf{x}|\mathbf{z})$
Posterior over $\mathbf{z}$	$p_\theta(\mathbf{z}|\mathbf{x})$
Posterior approximation over $\mathbf{z}$ $q_\psi(\mathbf{z}|\mathbf{x})$	

0   Auto Encoding Variational Bayes

Authors: **Diederik P. Kingma, Max Welling** [**?**]

Main contributions   of this paper is as follows:

1. The reparametrization trick for SDG methods

2. The first "vanilla" VAE

0.1   Method and setup

Assume a directed graphical model able to do both inference and running a pure generative process.

We define the problem as the following: Given a generative model $p_\theta(x)$, we want to find the optimal parameters for θ.

$$p(\mathbf{x}) = p_\theta(\mathbf{x}|\mathbf{z})p_\theta(\mathbf{z}) \tag{1}$$

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