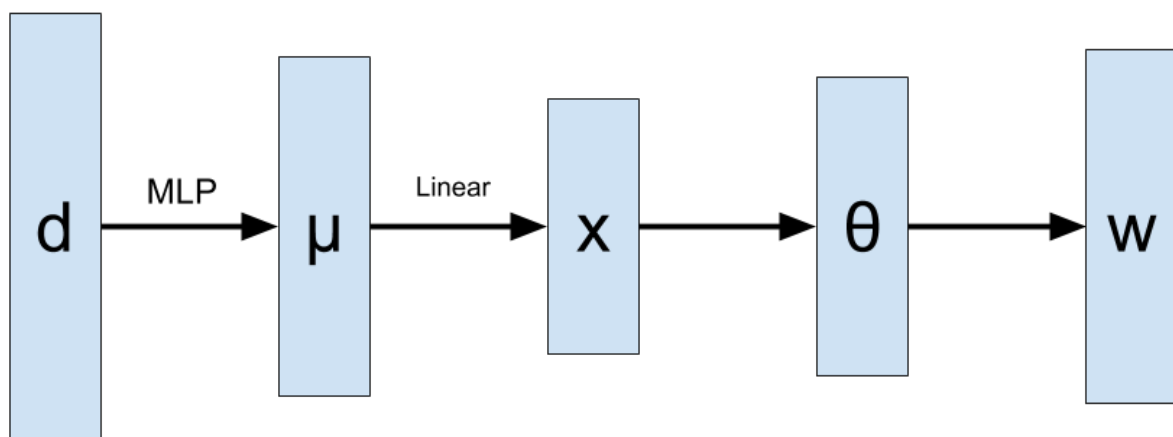


Discovering Discrete Latent Topics with Neural Variational Inference

Yishu Miao, Edward Grefenstette and Phil Blunsom. Discovering Discrete Latent Topics with Neural Variational Inference. ICML 2017.

Use Neural Network to model topic distribution.

Method



1. Document \rightarrow Latent Variable
2. Latent Variable \rightarrow Topic

Get Latent Variable

$$\theta_d \sim \text{Dir}(\alpha) \sim G(x)$$

Where G is a Neural Network, $x \sim N(\mu, \sigma)$.

Get Topic From Latent Variable

2 ways:

Gaussian Softmax (Baseline)

$$\theta = \text{softmax}(W_1^T x)$$

Stick Breaking

$$\eta = f_h(x)$$

$$\theta_i = \eta_i \prod_{j=1}^{i-1} (1 - \eta_{j-1})$$

Conclude Topic

- ith topic lower bound:

$$L_d^i \approx \sum_i [\log(w_n | \beta^i, \theta^i)] - D_{KL} [q(x|d) || p(x)]$$

- ith topic score:

$$I = \frac{\sum_d [L_d^i - L_d^{i-1}]}{\sum_d [L_d^i]}$$

Reference

- [Video: Report](#)