

Training Normalizing Flows

Density evaluation and training is based on change of variable formula

$$p_{\mathbf{x}}(\mathbf{x} = \text{img1}) = p_z(T_{\theta}(\mathbf{x}) = \text{img2})$$

Impossible to
calculate!

Easy to calculate!
=> log likelihood
related to $\|f_{\theta}(x)\|_2$

Training Normalizing Flows

Density evaluation and training is based on change of variable formula

$$p_{\mathbf{x}}(\mathbf{x} = \text{[Image of a man]}) = p_z(T_{\theta}(\mathbf{x}) = \text{[Image of noise]}) \left| \det \frac{\partial T_{\theta}(\mathbf{x})}{\partial \mathbf{x}} \right|$$

↓

Impossible to calculate!

↓

Easy to calculate!
=> log likelihood
related to $\|T_{\theta}(x)\|_2$

↓

All of Normalizing Flow literature is trying to build T_{θ} such that this is tractable to calculate.