## **Gradients**

$$\nabla_{\phi} f(w, \phi) = \sum_{i} \mathbb{E}_{p(\varepsilon_{i})} \nabla_{\phi} \log p(x_{i} \mid g(\varepsilon_{i}, x_{i}, \phi), w)$$
$$p(\varepsilon_{i}) = \mathcal{N}(0, I)$$
$$t_{i} = \varepsilon_{i} \odot s_{i} + m_{i} = g(\varepsilon_{i}, x_{i}, \phi)$$

