

Gradients

$$\nabla_{\phi} f(w, \phi) = \sum_i \int \nabla_{\phi} q(t_i \mid x_i, \phi) \log p(x_i \mid t_i, w) dt_i$$

$$\neq \sum_i \int q(t_i \mid x_i, \phi) \underbrace{\nabla_{\phi} \log p(x_i \mid t_i, w)}_0 dt_i$$