

Example

$$p(\theta|x) = \frac{p(x|\theta)p(\theta)}{p(x)} = \frac{\mathcal{N}(x|\theta, 1)\mathcal{N}(\theta|0, 1)}{p(x)}$$

$$p(\theta|x) \propto e^{-\frac{1}{2}(x-\theta)^2} e^{-\frac{1}{2}\theta^2}$$

$$p(\theta|x) \propto e^{-(\theta - \frac{x}{2})^2}$$

$$p(\theta|x) = \mathcal{N}(\theta|\frac{x}{2}, \frac{1}{2})$$

