

E-Step Rewritten:

$$Q(\vec{\theta}|\vec{\theta}^k) = E[\log a(x)|\vec{y}, \vec{\theta}^k] + \pi(\vec{\theta})^T E[\vec{t}(\vec{x})|\vec{y}, \vec{\theta}^k] + \log c(\vec{\theta}) \quad (1)$$

$$\vec{t}^{[k+1]} = E[\log a(\vec{x})|\vec{y}, \vec{\theta}^{[k]}] \quad (2)$$

M-Step Rewritten:

$$E[\log(a(\vec{x}))|\vec{y}, \vec{\theta}^{[k]}] + \pi(\vec{\theta})\vec{t}^{[k+1]} + \log c(\vec{\theta}) \quad (3)$$