

General form of Expectation Maximization

$$\begin{aligned}\log p(X \mid \theta) &= \sum_{i=1}^N \log p(x_i \mid \theta) \\ &= \sum_{i=1}^N \log \sum_{c=1}^3 \frac{q(t_i = c)}{q(t_i = c)} p(x_i, t_i = c \mid \theta)\end{aligned}$$