

# K-Means from EM perspective

E-step

$$q^{k+1}(t_i) = \begin{cases} 1 & \text{if } t_i = c_i \\ 0 & \text{otherwise} \end{cases}$$

$$c_i = \arg \max_c p(t_i = c \mid x_i, \theta)$$

$$p(t_i \mid x_i, \theta) = \frac{1}{Z} p(x_i \mid t_i, \theta) p(t_i \mid \theta)$$