K-Means from EM perspective

E-step

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

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

$$\begin{aligned} p(t_i \mid x_i, \theta) &= \frac{1}{Z}\, p(x_i \mid t_i, \theta)\, p(t_i \mid \theta) \\ &= \frac{1}{Z}\, \exp\left(-0.5\|x_i - \mu_c\|^2\right) \pi_c \end{aligned}$$