Lấy đạo hàm riêng cho 
$$\mathcal{L}$$

$$\frac{\partial \mathcal{L}(\hat{P}(c_j), \lambda)}{\partial \hat{P}(c_i)} = \frac{Count(c_j)}{\hat{P}(c_i)} = 0$$

 $\mathcal{L}(\hat{P}(c_j), \Lambda) = \sum_{j=1}^k Count(c_j) \log(\hat{P}(c_j)) + \lambda(1 - \sum_{j=1}^k \hat{P}(c_j))$ 

$$\Rightarrow \hat{P(c_j)} = \frac{Count(c_j)}{\lambda}(1)$$

$$\frac{\partial \mathcal{L}(\hat{P}(c_j), \lambda)}{\partial \lambda} = 1 - \sum_{j=1}^k \hat{P}(c_j) = 0$$

$$\Rightarrow \sum_{j=1}^{k} = 1(2)$$

Thế (1) vào (2): 
$$\sum_{i=1}^{k} Count(c_i)$$

$$\Leftrightarrow \sum_{i=1}^{k} \frac{Count(c_i)}{\lambda} = 1$$

$$\Leftrightarrow \sum_{j=1}^{\infty} \frac{1 - \frac{k}{\lambda}}{\lambda}$$

$$\Rightarrow \frac{1}{\lambda} \sum_{k=1}^{k} Count$$

$$\Leftrightarrow \frac{1}{\lambda} \sum_{j=1}^{k} Count$$

$$\Leftrightarrow \frac{1}{\lambda} \sum_{j=1}^{k} Count$$

$$\Leftrightarrow \frac{1}{\lambda} \sum_{j=1}^{k} Count(c_j) = 1$$

$$N_{doc}$$

 $\Rightarrow \hat{P}(c_j) = \frac{Count(c_j)}{\lambda} = \frac{Count(c_j)}{N_{dec}} (dpcm)$ 

$$\Leftrightarrow \frac{N_{doc}}{\lambda} = 1$$

$$\Leftrightarrow \frac{N_{doc}}{\lambda} = 1$$
$$\Rightarrow \lambda = N_{doc}$$