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A
Cálculo de $P(\boldsymbol{m}, \boldsymbol{\sigma}, \boldsymbol{c})$

O cálculo da probabilidade $P(\boldsymbol{m}, \boldsymbol{\sigma}, \boldsymbol{c})$ é obtido por

$$\begin{aligned} P(\boldsymbol{m}, \boldsymbol{\sigma}, \boldsymbol{c}) &= P(\boldsymbol{m}_1, \ldots, \boldsymbol{m}_N, \sigma_0, \ldots, \sigma_N, \boldsymbol{c}_1, \ldots, \boldsymbol{c}_N) \\ &= P(\sigma_0) P(\boldsymbol{m}_1, \ldots, \boldsymbol{m}_N, \sigma_1, \ldots, \sigma_N, \boldsymbol{c}_1, \ldots, \boldsymbol{c}_N | \sigma_0) \end{aligned} \tag{A-1}$$

$$\begin{aligned} & P(\boldsymbol{m}_i, \ldots, \boldsymbol{m}_N, \sigma_i, \ldots, \sigma_N, \boldsymbol{c}_i, \ldots, \boldsymbol{c}_N | \sigma_{i-1}) \\ & = P(\boldsymbol{m}_i | \sigma_{i-1}) P(\sigma_i, \boldsymbol{c}_i | \boldsymbol{m}_i, \sigma_{i-1}) \times \\ & \quad P(\boldsymbol{m}_{i+1}, \ldots, \boldsymbol{m}_N, \sigma_{i+1}, \ldots, \sigma_N, \boldsymbol{c}_{i+1}, \ldots, \boldsymbol{c}_N | \sigma_{i-1}, \boldsymbol{m}_i, \boldsymbol{c}_i, \sigma_i) \\ & = P(\boldsymbol{m}_i) P(\sigma_i, \boldsymbol{c}_i | \boldsymbol{m}_i, \sigma_{i-1}) \times \\ & \quad P(\boldsymbol{m}_{i+1}, \ldots, \boldsymbol{m}_N, \sigma_{i+1}, \ldots, \sigma_N, \boldsymbol{c}_{i+1}, \ldots, \boldsymbol{c}_N | \sigma_{i-1}) \end{aligned} \tag{A-2}$$

para $i = 1, \ldots, N-1$.

$$P(\boldsymbol{m}_N, \sigma_N, \boldsymbol{c}_N | \sigma_{N-1}) = P(\boldsymbol{m}_N) P(\sigma_N, \boldsymbol{c}_N | \boldsymbol{m}_N, \sigma_{N-1}) \tag{A-3}$$

$$P(\boldsymbol{\sigma}, \boldsymbol{m}, \boldsymbol{c}) = P(\sigma_0) \prod_{i=1}^{N} P(\boldsymbol{m}_i) \prod_{i=1}^{N} P(\boldsymbol{c}_i, \sigma_i | \boldsymbol{m}_i, \sigma_{i-1}) \tag{A-4}$$

$$P(\boldsymbol{c}_i, \sigma_i | \boldsymbol{m}_i, \sigma_{i-1}) = \begin{cases} 1, & (\sigma_{i-1}, \boldsymbol{m}_i, \boldsymbol{c}_i, \sigma_i) \in T_i \\ 0, & \text{caso contrário} \end{cases} = f_i(\sigma_{i-1}, \boldsymbol{m}_i, \boldsymbol{c}_i, \sigma_i) \tag{A-5}$$

$$P(\boldsymbol{m}, \boldsymbol{\sigma}, \boldsymbol{c}) = P(\sigma_0) \prod_{i=1}^{N} P(\boldsymbol{m}_i) \prod_{i=1}^{N} f_i(\sigma_{i-1}, \boldsymbol{m}_i, \boldsymbol{c}_i, \sigma_i) \tag{A-6}$$

Para o caso em que o codificador é terminado, o desenvolvimento é igual ao anterior para $i = 1, \ldots, N-\nu$. Para $i = N-\nu+1$ temos

$$P(\boldsymbol{m}_{N-\nu+1}, \ldots, \boldsymbol{m}_N, \sigma_{N-\nu+1}, \ldots, \sigma_N, \boldsymbol{c}_{N-\nu+1}, \ldots, \boldsymbol{c}_N | \sigma_{N-\nu}) \quad \text{(A-7)}$$
$$= P(\sigma_N|\sigma_{N-\nu}) P(\boldsymbol{m}_{N-\nu+1}, \ldots, \boldsymbol{m}_N, \sigma_{N-\nu+1}, \ldots, \sigma_{N-1}, \boldsymbol{c}_{N-\nu+1}, \ldots, \boldsymbol{c}_N | \sigma_{N-\nu}, \sigma_N)$$
$$= P(\sigma_N) P(\boldsymbol{m}_{\mathsf{cauda}}, \boldsymbol{\sigma}_{\mathsf{cauda}} \boldsymbol{c}_{\mathsf{cauda}} | \sigma_{N-\nu}, \sigma_N)$$

$$P(\boldsymbol{m}_{\mathsf{cauda}}, \boldsymbol{\sigma}_{\mathsf{cauda}} \boldsymbol{c}_{\mathsf{cauda}} | \sigma_{N-\nu}, \sigma_N) = \begin{cases} 1 & (\sigma_{N-\nu}, \boldsymbol{m}_{\mathsf{cauda}}, \boldsymbol{\sigma}_{\mathsf{cauda}} \boldsymbol{c}_{\mathsf{cauda}}, \sigma_N) \in \mathcal{X}_{\mathsf{cauda}} \\ 0 & \text{caso contrário} \end{cases} \quad \text{(A-8)}$$

$$= \prod_{i=N-\nu+1}^{N} f_i(\sigma_{i-1}, \boldsymbol{m}_i, \boldsymbol{c}_i, \sigma_i) \quad \text{(A-9)}$$

$$P(\boldsymbol{m}, \boldsymbol{\sigma}, \boldsymbol{c}) = P(\sigma_0) P(\sigma_N) \prod_{i=1}^{N-\nu} P(\boldsymbol{m}_i) \prod_{i=1}^{N} f_i(\sigma_{i-1}, \boldsymbol{m}_i, \boldsymbol{c}_i, \sigma_i) \quad \text{(A-10)}$$