## Pha huấn luyện

nhãn = B

| | hanoi | pho | chaolong | buncha | omai | banhgio | saigon | hutiu | banhbo | |
|---|---|---|---|---|---|---|---|---|---|---|
| d1: $\mathbf{x}_1$ | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| d2: $\mathbf{x}_2$ | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | |
| d3: $\mathbf{x}_3$ | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | $d = \lvert V\rvert = 9$ |
| Tổng | 3 | 3 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | $\Rightarrow N_{\mathrm{B}} = 11$ |
| $\Rightarrow \hat{\lambda}_{\mathrm{B}}$ | 4/20 | 4/20 | 2/20 | 2/20 | 3/20 | 2/20 | 1/20 | 1/20 | 1/20 | $(20 = N_{\mathrm{B}} + \lvert V\rvert)$ |

nhãn = N

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| d4: $\mathbf{x}_4$ | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | $\Rightarrow N_{\mathrm{N}} = 4$ |
| $\Rightarrow \hat{\lambda}_{\mathrm{N}}$ | 1/13 | 2/13 | 1/13 | 1/13 | 1/13 | 1/13 | 2/13 | 2/13 | 2/13 | $(13 = N_{\mathrm{N}} + \lvert V\rvert)$ |

## Pha kiểm tra

d5: $\mathbf{x}_5 = [2, 0, 0, 1, 0, 0, 0, 1, 0]$

$$p(\mathrm{B}|\mathrm{d5}) \propto p(\mathrm{B}) \prod_{i=1}^{d} p(x_i|\mathrm{B})$$

$$= \tfrac{3}{4} \left(\tfrac{4}{20}\right)^2 \tfrac{2}{20} \tfrac{1}{20} \approx 1.5 \times 10^{-4}$$

$$p(\mathrm{N}|\mathrm{d5}) \propto p(\mathrm{N}) \prod_{i=1}^{d} p(x_i|\mathrm{N})$$

$$= \tfrac{1}{4} \left(\tfrac{1}{13}\right)^2 \tfrac{1}{13} \tfrac{2}{13} \approx 1.75 \times 10^{-5}$$

$\Rightarrow p(\mathbf{x}_5|\mathrm{B}) > p(\mathbf{x}_5|\mathrm{N}) \Rightarrow \mathrm{d5} \in \mathrm{nhãn(B)}$