

Classification problems define each state of nature with associations between classes and actions. For notational purposes

- classes are denoted by c
- the action α_i
- state of nature ω_j
- $\lambda(\alpha_i|\omega_j)$ is a loss function that quantifies exactly how costly each action is.
- Minimum error rate is defined:

$$\lambda(\alpha|\omega_j) = \begin{cases} 0 & i \equiv j, i, j = 1, \dots, c \\ 1 & i \neq j \end{cases} \quad (1)$$