

Ch 6 Bayes test

$$\gamma_B \rightarrow H_0: \theta = \theta_0 \text{ vs } H_1: \theta = \theta_1$$

Prior:
 $g(\theta_0)$
 $g(\theta_1)$

losses
 $A = L(d_1, \theta_0)$
 $B = L(d_0, \theta_1)$

we reject H_0 if $\lambda < k$

$$\frac{\prod_{i=1}^n f(x_i; \theta_0)}{\prod_{i=1}^n f(x_i; \theta_1)} = \frac{L(\theta_0; X)}{L(\theta_1; X)}$$

$$\frac{B g(\theta_1)}{A g(\theta_0)} = \frac{L(d_0, \theta_1) g(\theta_1)}{L(d_1, \theta_0) g(\theta_0)}$$

types of errors

$$\alpha_B = P(\text{reject } H_0 | H_0 \text{ V})$$

$$\beta_B = P(\text{accept } H_0 | H_0 \text{ X})$$

$$H_1 \text{ V}$$

risk for test γ

$$R(\gamma, \theta_0) = \alpha A = \alpha L(d_1, \theta_0)$$

$$R(\gamma, \theta_1) = \beta B = \beta L(d_0, \theta_1)$$

Bayes risk for test γ $\rightarrow B(\gamma) = \alpha A g(\theta_0) + \beta B g(\theta_1)$

where

$$B(\gamma_B) \leq B(\gamma) \quad \forall \gamma$$

$$\alpha \leq \alpha_{MP} + \pi \leq \pi_{MP}$$

$$+ \beta_{MP} \leq \beta$$

من مسلمات بیس

MP من مسلمات