Medidas de similitud

Tags: Reconocimiento de Patrones

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Distancia Euclidiana

$$d_{\text{euc}}(x,y) = \sqrt{\sum_{i=1}^{n}(x_i - y_i)^2}$$

Distancia Manhattan

$$d_{man}(x,y) = \sum_{k=1}^{d}|x_j - y_j|$$

Distancia Máxima

$$d_{max}(x,y) = max|x_j - y_j|$$

Distancia Minkowsky

$$d_{min}(x,y) = \left(\sum_{j=1}^{d}|x_j - y_j|^r\right)^{1/r}$$

Distancia Mahalanobis

$$d_{mah}(x,y) = \sqrt{(X-Y)\Sigma^{-1}(X-Y)^T}$$

Distancia promedio

$$d_{\text{avg}}(x,y) = \sqrt{\frac{1}{d}\sum_{j=1}^{d}(x_j - y_j)^2}$$

Distancia cuerda

$$d_{\text{chord}}(x,y) = \sqrt{2 - 2\frac{\sum_{k=1}^{d}x_j y_j}{||X||_2||Y||_2}}$$

donde $||X||_2$ es la normalizacion L_2:

$$||X||_2 = \sqrt{\sum_{k=1}^{d}x_j^2}$$

Distancia geodesica

$$d_{\text{geo}}(x, y) = arcos(1 - \frac{d_{\text{chord}}(x, y)}{2})$$

Distancia Hamming

$$d_{\text{Hamming}}(x, y) = \sum_{i=1}^{n} 1(x_i \neq y_i)$$

Distancia coseno

$$d_{\cos} = \frac{\sum_{i=i}^{n} A_i B_i}{\sqrt{\sum_{i=1}^{n} A_i^2} * \sqrt{\sum_{i=1}^{n} B_i^2}}$$

Distancia entre landmarks

$$\Delta_k(L, L') = (\delta_k^{(t)}(L, L'), \delta_k^a(L, L'))$$

donde

$$\delta_k^{(t)} = \begin{cases} \dfrac{2|(x_k - x_{k-1}) - (x'_k - x'_{k-1})|}{|x_k - x_{k-1}| + |x'_k - x'_{k-1}|} & \text{if } 1 < k \leq n, \\ 0 \qquad \text{otherwise} \end{cases}$$

$$\delta_k^{(t)} = \begin{cases} 0 & \text{if } y_k = y'_k, \\ \dfrac{2|y_k - y'_k|}{|y_k| + |y'_k|} & \text{otherwise} \end{cases}$$

References