Cluster Validity

August 28, 2013

1 指標1

$$WCD = \frac{\sum_{k}^{K} \frac{\sum_{i}^{I_{k}} min(d(x_{ki}, x_{kj}))}{I_{k}}}{K}$$
 (1)

$$BCD = \frac{\sum_{k}^{K} min(d(x_{ki}, x_{lj}))}{K}$$
 (2)

$$Index1 = \frac{WCD}{BCD} = \frac{\sum_{k}^{K} \frac{\sum_{i}^{I_{k}} \min(d(x_{ki}, x_{kj}))}{I_{k}}}{\sum_{k}^{K} \min(d(x_{ki}, x_{lj}))}$$
(3)

ただし、クラスタ数: K、クラスタ ${
m ID}$: k または l、サンプル ${
m ID}$: x_{ki} または x_{kj} 、クラスタ k のサンプル数: I_k 。

2 指標2

$$WCD = \frac{\sum_{k=1}^{K} \frac{1}{I_{k}} \sum_{i}^{I_{k}} \min(d(x_{ki}, x_{kj}))}{K}$$
(4)

$$WCS = \frac{1}{K} \frac{\sum_{k=1}^{K} \sum_{i=1}^{K} \sum_{k=1}^{I_{k}} \sum_{i=1}^{K} \min(d(x_{ki}, x_{kj}))}{K}$$
 (5)

$$BCD = \frac{\sum_{k}^{K} min(d(x_{ki}, x_{kj}))}{K}$$
 (6)

$$BCS = \frac{1}{K} \frac{\sum_{k=min(d(x_{ki}, x_{kj}))}^{K}}{K}$$
 (7)

$$Index2 = WCS.BCS = \frac{1}{K} \frac{\sum_{k}^{K} \frac{1}{I_{k}} \sum_{i}^{I_{k}} \min(d(x_{ki}, x_{kj}))}{K} + \frac{\sum_{k}^{K} \min(d(x_{ki}, x_{kj}))}{K}$$
(8)

ただし、クラスタ数: K、クラスタ ${
m ID}$: k または l、サンプル ${
m ID}$: x_{ki} または x_{kj} 、クラスタ k のサンプル数: I_k 。