Cluster Validity

September 5, 2013

1 图 1

$$WCD = \frac{\sum_k^K \frac{\sum_i^{I_k} min_j(d(x_{ki}, x_{kj}))}{I_k}}{K} \tag{1}$$

$$BCD = \frac{\sum_k^K min_j(d(x_{ki}, x_{lj}))}{K} \tag{2}$$

$$min1 = \frac{WCD}{BCD} = \frac{\sum_k^K \frac{\sum_i^{I_k} min_j(d(x_{ki}, x_{kj}))}{I_k}}{\sum_k^K min_j(d(x_{ki}, x_{lj}))} \tag{3}$$

▪ ▪鴻炊: K ▪ ▪鴻 ID: k 障 l 泣潟 ID: x_{ki} 障 x_{kj} ▪ ▪鴻 k ▪泣潟▪: $I_k f(i)$ ▪≪絨: $min_j(f(j))$ 荘$\int \infty$:$f(x, y)$

2 图 2

$$WCD = \frac{\sum_k^K \frac{1}{I_k} \sum_i^{I_k} min_j(d(x_{ki}, x_{kj}))}{K} \tag{4}$$

$$WCS = \frac{1}{K} \frac{\sum_k^K \frac{1}{I_k} \sum_i^{I_k} min_j(d(x_{ki}, x_{kj}))}{K} \tag{5}$$

$$BCD = \frac{\sum_k^K min_j(d(x_{ki}, x_{kj}))}{K} \tag{6}$$

$$BCS = \frac{1}{K} \frac{\sum_k^K min_j(d(x_{ki}, x_{kj}))}{K} \tag{7}$$

$$min2 = WCS.BCS = \frac{1}{K} \frac{\sum_k^K \frac{1}{I_k} \sum_i^{I_k} min_j(d(x_{ki}, x_{kj}))}{K} + \frac{\sum_k^K min_j(d(x_{ki}, x_{kj}))}{K} \tag{8}$$

▪ ▪鴻炊: K ▪ ▪鴻 ID: k 障 l 泣潟 ID: x_{ki} 障 x_{kj} ▪ ▪鴻 k ▪泣潟▪: $I_k f(i)$ ▪≪絨: $min_j(f(i))$ 荘$\int \infty$:$f(x, y)$

3　罔 3

$$min3 = \sum_{k}^{K} \frac{\sum_{i}^{I_k} min_j(d(x_{ki}, x_{kj}))}{I_k} \tag{9}$$

▪ ▪ 鴻炊: K ▪ ▪ 鴻 ID: k 障 l 泣潟 ID: x_{ki} 障 x_{kj} ▪ ▪ 鴻 k ▪ 泣潟 ▪ : $I_k f(i)$ ▪ ≪ 絨: $min_j(f(j))$ 荘 $\int \infty$:$f(x, y)$

4　罔 4

$$min4 = \frac{\sum_{k}^{K} \frac{1}{I_k} \sum_{i}^{I_k} min_j(d(x_{ki}, x_{kj}))}{K} \tag{10}$$

▪ ▪ 鴻炊: K ▪ ▪ 鴻 ID: k 障 l 泣潟 ID: x_{ki} 障 x_{kj} ▪ ▪ 鴻 k ▪ 泣潟 ▪ : $I_k f(i)$ ▪ ≪ 絨: $min_j(f(j))$ 荘 $\int \infty$:$f(x, y)$