Distance   Dendrogram

39.357
39.395
3群羊
21.095
20

[60,30] [80,30] [64,66] [82,55] [22,60] [40,25]   object

Homework 4   B11141065   電機四乙   陳昱安

若 D = [[22,60],[40,25],[60,30],[64,66],[80,30],[82,55]] 請寫出使用
complete linkage 分群的計算過程,建立 dendrogram,最後分三群,寫出最後
哪些資料分在同一群

解:<key>每次合併距離值最近的2個點(集合),直到完成分群

1° 以全域計算距離值

$d([22,60],[40,25]) = 39.357$ | $d([22,60],[60,30]) = 48.414$ | $d([22,60],[64,66]) = 42.4264$

$d([22,60],[80,30]) = 65.299$ | $d([22,60],[82,55]) = 60.2079$ | $d([40,25],[60,30]) = 20.615$

$d([40,25],[64,66]) = 47.5078$ | $d([40,25],[80,30]) = 40.31$ | $d([40,25],[82,55]) = 51.6139$

$d([60,30],[64,66]) = 36.2215$ | $d([60,30],[80,30]) = 20$ | $d([60,30],[82,55]) = 33.3016$

$d([64,66],[80,30]) = 39.395$ | $d([64,66],[82,55]) = 21.095$ | $d([80,30],[82,55]) = 25.079$

2° 第1輪分群

∵ $d([60,30],[80,30]) = 20$ 為眼最小 ⇒ 說明兩者距離值最近   5群羊

∴ 將 [60,30] 與 [80,30] 合併 ⇒ [22,60], [40,25], [[60,30],[80,30]], [64,66], [82,55]

3° 第2輪分群

① $d([22,60],[[60,30],[80,30]]) = \max\{d([22,60],[60,30]), d([22,60],[80,30])\} = 65.299$

② $d([40,25],[[60,30],[80,30]]) = \max\{d([40,25],[60,30]), d([40,25],[80,30])\} = 40.31$

③ $d([64,66],[[60,30],[80,30]]) = \max\{d([64,66],[60,30]), d([64,66],[80,30])\} = 39.395$

④ $d([82,55],[[60,30],[80,30]]) = \max\{d([82,55],[60,30]), d([82,55],[80,30])\} = 33.3016$

⇒ 其中 $d([64,66],[82,55]) = 21.095$ 為眼最小   4群羊

∴ 將 [64,66] 與 [82,55] 合併 ⇒ [22,60], [40,25], [[60,30],[80,30]], [[64,66],[82,55]]

4° 第3輪分群

① $d([22,60],[[64,66],[82,55]]) = \max\{d([22,60],[64,66]), d([22,60],[82,55])\} = 60.2079$

② $d([40,25],[[64,66],[82,55]]) = \max\{d([40,25],[64,66]), d([40,25],[82,55])\} = 51.6139$

③ $d([[60,30],[80,30]],[[64,66],[82,55]]) = d([64,66],[80,30]) = 39.395$ 此為眼最小

⇒ ∴ [[60,30],[80,30]] 與 [[64,66],[82,55]] 合併

⇒ [22,60], [40,25], [[60,30],[80,30],[64,66],[82,55]]
   c_1 c_2 c_3

3群羊(完成)

/ A: 共分成3群,資料結果
  如下:
  c_1: [22,60]
  c_2: [40,25]
  c_3: [60,30],[80,30],[64,66],[82,55]

choyv culture