Heuristik für „Densely-connected Biclustering"

Algorithm 1 Densely-connected Biclustering

1: **function** TESTHOMOGENITY(A, ω, δ, g)
2:     $l \leftarrow (A^\mathsf{T})_{g_0}$, $l \leftarrow u$
3:     **for all** nodes i from $g \setminus \{g_0\}$ **do**
4:         **for all** dimensions d of attribute matrix A **do**
5:             $l \leftarrow \min\{l_d, A_{id}\}$, $u \leftarrow \max\{l_d, A_{id}\}$
6:     $c \leftarrow 0$
7:     **for all** dimensions d of attribute matrix A **do**
8:         **if** $|u_d - l_d| \leq \omega_d$ **then**
9:             $c \leftarrow c + 1$
10:         **if** $c \geq \delta$ **then**
11:             **return** true
    return false

1: **function** PREPROCESSGRAPH(M, A, ω, δ)
2:     $G \leftarrow \emptyset$
3:     **for all** rows i of adjacency matrix M **do**
4:         **for all** columns j of adjacency matrix M **do**
5:             **if** $M_{ij} = 1$ **then**
6:                 **if** TESTHOMOGENITY(A, ω, δ, $\{i, j\}$) **then**
7:                     $G \leftarrow G \cup \{\{i, j\}\}$
8:                 **else**
9:                     $M_{ij} = 0$, $M_{ji} = 0$
    return G

1: **function** DCB(M, A, α, ω, δ)
2:     $G \leftarrow$ PREPROCESSGRAPH(M, A, ω, δ)
3:     $F \leftarrow \emptyset$
4:     **while** $G \neq \emptyset$ **do**
5:         $G' \leftarrow G$, $G \leftarrow \emptyset$
6:         **for all** node sets g in G' **do**
7:             $b \leftarrow$ true
8:             **for all** connected nodes h with $h > \max g$ **do**
9:                 $\hat{g} \leftarrow g \cup \{h\}$
10:                 **if** TESTHOMOGENITY(A, ω, δ, $\hat{g}$) $\wedge$ GRAPHDENSITY(M, $\hat{g}$) $\leq \alpha$ **then**
11:                     $G \leftarrow G \cup \{\hat{g}\}$
12:                     $b \leftarrow$ false
13:             **if** b **then**
14:                 $F \leftarrow F \cup \{g\}$
15:     **return** F