
Algoritmo 1: Local and Global Consistency

Input: Graph, Set of points $X = \{x_1, \dots, x_l, x_{l+1}, \dots, x_n\} \subseteq R^m$,
Set of labels $L = \{1, \dots, c\}$, $\alpha \in (0, 1)$, tolerance, Maximum
number of iterations

Output: Predicted labels for the unlabeled points

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1 Step 1: Form the affinity matrix  $W$ 
2 for  $i = 1$  to  $n$ 
3     for  $j = 1$  to  $n$ 
4         if  $\exists \text{ link}(i, j)$ 
5              $W_{ij} \leftarrow 1$ 
6         end
7     else
8          $W_{ij} \leftarrow 0$ 
9     end
10 endfor
11 endfor

12 Step 2: Construct the matrix  $S = D^{-1/2}WD^{-1/2}$ 
13  $D$  is a diagonal matrix with the element  $(i, i)$  equal to the sum of
    the  $i$ -th row of  $W$ 

14 Step 3: Iterate  $F^{(t+1)} = \alpha SF^{(t)} + (1 - \alpha)Y$  until reaching
    tolerance or maxIter

15 Step 4: Assign labels
16  $F^*$  denotes the limit of the sequence  $\{F^{(t)}\}$ 
17 for  $i = 1$  to  $n$ 
18      $y_i \leftarrow \arg \max_{j \leq c} F_{ij}^*$ 
19 endfor
20 return  $y_i$ 
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