

Exercises: PageRank

October 23, 2017

Task 1

Compute the PageRank values for the following graph for three iterations using $q = 0.5$.

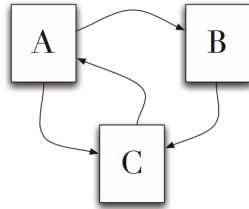


Figure 1: Web graph for Task 1

Algorithm

- All pages are given equal page rank $\frac{1}{T}$ (where T is the number of pages)
- Substitute the values and compute new PageRank values using Equation 1
- Repeat for the required number of iterations

$$PR(a) = \frac{q}{T} + (1 - q) \sum_{i=1}^n \frac{PR(p_i)}{L(p_i)} \quad (1)$$

Solution

Page	$L(p)$	Iteration 0	Iteration 1	Iteration 2	Iteration 3
A					
B					
C					

Table 1: PageRank values.

Task 2

Compute the PageRank values for the following graph for three iterations using $q = 0.15$.

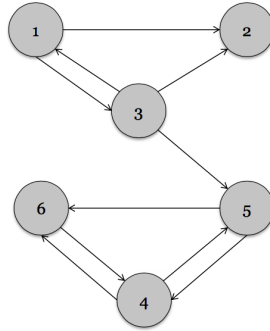


Figure 2: Web graph for Task 2

Algorithm

- All pages are given equal page rank $\frac{1}{T}$ (where T is the number of pages)
- Substitute the values and compute new PageRank values using Equation 2
- Repeat for the required number of iterations
- Notice that node 2 is a rank sink (no outgoing links); pretend that it links to all other nodes (including itself)

$$PR(a) = \frac{q}{T} + (1 - q) \sum_{i=1}^n \frac{PR(p_i)}{L(p_i)} \quad (2)$$

Solution

Page	$L(p)$	Iteration 0	Iteration 1	Iteration 2
1				
2				
3				
4				
5				
6				

Table 2: PageRank values.