Suppose super-concept *TastyFood* (D) contains 4 subsumed concepts with confidence score:

1. Ice-Cream 0.9 (C_1)
2. Brownie 0.7 (C_2)
3. Ramen 0.7 (C_3)
4. Pizza 0.7 (C_4)

C	O	$\hat{r_O}$	P_1	$\hat{r_{P1}}$	b_1	P_2	$\hat{r_{P2}}$	b_2
C_1	4	0.9	4	0.6	0	4	0.7	0
C_2	3	0.7	3	0.4	0	4	0.7	1
C_3	3	0.7	3	0.4	0	3	0.4	0
C_4	3	0.7	4	0.6	1	3	0.4	0
	$\sum$=13		$\sum$=14			$\sum$=14		

nDCG is inapplicable in cases where the sum of original rank prediction (13) is less than predicted rank sum. It gives a score greater than 1 which is not correct as it ranges [0,1].

So we use ***hDMA*** which is explained below.

C- sub-concepts of superconcept D.
O- original rank of subconcepts based on decreasing confidence scores $\hat{r_o}$.
$\hat{r_o}$- original confidence score of relatedness to D. P_i- predicted ranking based on predicted confidence score $\hat{r_{p_i}}$.
b_i- bit vector of XOR operation between 0 and P_i.

$$O \oplus P_1 = (0001)_2 = (1)_{10}$$
$$hDMA(O, P_1) = \frac{1}{1+1}$$

$$O \oplus P_2 = (0100)_2 = (4)_{10}$$
$$hDMA(O, P_2) = \frac{4}{4+1}$$

The hDMA method appropriately assigns a higher score to the more deviant rank distribution, P_2.This is because P_2 exhibits a deviation in the 2nd position, whereas P_1 deviates in the 4th position. Since higher-ranked positions in the ranking table indicate greater importance, the deviation in P_2 is considered more significant.