By: Jhoan Sebastian Saavedra Romero

1. Calcular para P@k, R@k (1<k<=7), asumiendo 5 documentos relevantes para query\_1, 4 documentos relevantes  para query\_2 y 5 documentos relevantes para query\_3.
2. Calcule el MAP (mean average presicion). Primero calculen el average precision y luego el MAP.

Solución 1 y 2:

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| --- | --- | --- | --- | --- |
|  | Query 1 | Revelantes | [P@K](mailto:P@K) | [R@K](mailto:R@K) |
| 1 | 1 | 1 | 0.2 | 1.00 |
| 2 | 0 | 1 | 0.2 | 0.50 |
| 3 | 1 | 2 | 0.4 | 0.67 |
| 4 | 0 | 2 | 0.4 | 0.50 |
| 5 | 1 | 3 | 0.6 | 0.60 |
| 6 | 1 | 4 | 0.8 | 0.67 |
| 7 | 1 | 5 | 1 | 0.71 |
| TOTAL | 5 |  | Average Precision | 0.66 |

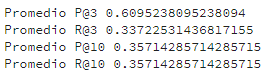
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Query 2 | Revelantes | [P@K](mailto:P@K) | [R@K](mailto:R@K) |
| 1 | 1 | 1 | 0.25 | 1.00 |
| 2 | 1 | 2 | 0.5 | 1.00 |
| 3 | 1 | 3 | 0.75 | 1.00 |
| 4 | 0 | 3 | 0.75 | 0.75 |
| 5 | 1 | 4 | 1 | 0.80 |
| 6 | 0 | 4 | 1 | 0.67 |
| 7 | 0 | 4 | 1 | 0.57 |
| TOTAL | 4 |  | Average Precision | 0.91 |

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| --- | --- | --- | --- | --- |
|  | Query 3 | Revelantes | [P@K](mailto:P@K) | [R@K](mailto:R@K) |
| 1 | 1 | 1 | 0.2 | 1.00 |
| 2 | 0 | 1 | 0.2 | 0.50 |
| 3 | 1 | 2 | 0.4 | 0.67 |
| 4 | 0 | 2 | 0.4 | 0.50 |
| 5 | 0 | 2 | 0.4 | 0.40 |
| 6 | 0 | 2 | 0.4 | 0.33 |
| 7 | 1 | 3 | 0.6 | 0.43 |
| 8 | 1 | 4 | 0.8 | 0.50 |
| 9 | 1 | 5 | 1 | 0.56 |
| TOTAL | 5 |  | Average Precision | 0.54 |

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| --- | --- |
| MAP= | (0.66+0.91+0.54)/3= 0.70554212 |
|

1. En proceso.

Solución:



1. Calcular el DCG  y NDCG para cada query.

Solución:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Query1 | | | | |  | Query1 Normalizado | | | | |
| rank(i) | REL\_i | discount factor | gain | DCG\_i |  | rank(i) | REL\_i | discount factor | gain | DCG\_i |
| 1 | 5 | 1.00 | 5.00 | 5.00 |  | 1 | 5 | 1.00 | 5.00 | 5.00 |
| 2 | 4 | 1.00 | 4.00 | 9.00 |  | 2 | 4 | 1.00 | 4.00 | 9.00 |
| 3 | 4 | 0.63 | 2.52 | 11.52 |  | 3 | 4 | 0.63 | 2.52 | 11.52 |
| 4 | 1 | 0.50 | 0.50 | 12.02 |  | 4 | 2 | 0.50 | 1.00 | 12.52 |
| 5 | 1 | 0.43 | 0.43 | 12.45 |  | 5 | 1 | 0.43 | 0.43 | 12.95 |
| 6 | 1 | 0.39 | 0.39 | 12.84 |  | 6 | 1 | 0.39 | 0.39 | 13.34 |
| 7 | 2 | 0.36 | 0.71 | **13.55** |  | 7 | 1 | 0.36 | 0.36 | **13.70** |

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| NDCG | (13.55/13.70)= 0.990 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Query2 | | | | |  | Query2 Normalizado | | | | |
| rank(i) | REL\_i | discount factor |  | DCG\_i |  | rank(i) | REL\_i | discount factor |  | DCG\_i |
| 1 | 4 | 1.00 | 4.00 | 4.00 |  | 1 | 5 | 1.00 | 5.00 | 5.00 |
| 2 | 4 | 1.00 | 4.00 | 8.00 |  | 2 | 4 | 1.00 | 4.00 | 9.00 |
| 3 | 5 | 0.63 | 3.15 | 11.15 |  | 3 | 4 | 0.63 | 2.52 | 11.52 |
| 4 | 1 | 0.50 | 0.50 | 11.65 |  | 4 | 2 | 0.50 | 1.00 | 12.52 |
| 5 | 1 | 0.43 | 0.43 | 12.09 |  | 5 | 1 | 0.43 | 0.43 | 12.95 |
| 6 | 0 | 0.39 | 0.00 | 12.09 |  | 6 | 1 | 0.39 | 0.39 | 13.34 |
| 7 | 2 | 0.36 | 0.71 | **12.80** |  | 7 | 0 | 0.36 | 0.00 | **13.34** |

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| NDCG | (12.80/13.34)=0.96 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Query3 | | | | |  | Query3 Normalizado | | | | |
| rank(i) | REL\_i | discount factor | gain | DCG\_i |  | rank(i) | REL\_i | discount factor | gain | DCG\_i |
| 1 | 1 | 1.00 | 1.00 | 1.00 |  | 1 | 5 | 1.00 | 5.00 | 5.00 |
| 2 | 1 | 1.00 | 1.00 | 2.00 |  | 2 | 5 | 1.00 | 5.00 | 10.00 |
| 3 | 5 | 0.63 | 3.15 | 5.15 |  | 3 | 2 | 0.63 | 1.26 | 11.26 |
| 4 | 5 | 0.50 | 2.50 | 7.65 |  | 4 | 2 | 0.50 | 1.00 | 12.26 |
| 5 | 2 | 0.43 | 0.86 | 8.52 |  | 5 | 1 | 0.43 | 0.43 | 12.69 |
| 6 | 2 | 0.39 | 0.77 | 9.29 |  | 6 | 1 | 0.39 | 0.39 | 13.08 |
| 7 | 1 | 0.36 | 0.36 | **9.65** |  | 7 | 1 | 0.36 | 0.36 | **13.44** |

|  |  |
| --- | --- |
| NDCG | (9.65/13.44)=0.72 |

1. Calcular el average NDCG del punto 4.

|  |  |
| --- | --- |
| Avarage NDCG | (0.990+0.96+0.72)/3=0.89 |