Short Query

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Evaluation  metric | Your  algorithm | Vector Space  Model | BM25 | Language  Model with  Dirichlet  Smoothing | Language  Model with  Jelinek  Mercer  Smoothing |
| P@5 | 0.2 | 0.4 | 0.6 | 0.6 | 0.3 |
| P@10 | 0.1 | 0.5 | 0.4 | 0.6 | 0.55 |
| P@20 | 0.1 | 0.4 | 0.4 | 0.4 | 0.15 |
| P@100 | 0.004 | 0.010 | 0.010 | 0.09 | 0.09 |
| Recall@5 | 0.03 | 0.06 | 0.1 | 0.1 | 0.55 |
| Recall@10 | 0.035 | 0.16 | 0.13 | 0.13 | 0.13 |
| Recall@20 | 0.1 | 0.2 | 0.2 | 0.25 | 0.1 |
| Recall@100 | 0.24 | 0.34 | 0.35 | 0.35 | 0.4 |
| MAP | 0.07 | 0.2 | 0.20 | 0.15 | 0.15 |
| MRR | 1 | 1.2 | 1.1 | 0.5 | 1 |
| NDCG@5 | 0.3531 | 0.553 | 0.9 | 0.5 | 0.5 |
| NDCG@10 | 0.2201 | 0.58 | 0.7 | 0.45 | 0.47 |
| NDCG@20 | 0.19 | 0.49 | 0.43 | 0.37 | 0.46 |
| NDCG@100 | 0.29 | 0.39 | 0.45 | 0.3 | 0.40 |
|  |  |  |  |  |  |

Long Query

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Evaluation  metric | Your  algorithm | Vector Space  Model | BM25 | Language  Model with  Dirichlet  Smoothing | Language  Model with  Jelinek  Mercer  Smoothing |
| P@5 | 0 | 0.2 | 0.6 | 0 | 0.2 |
| P@10 | 0 | 0.25 | 0.25 | 0.2 | 0.3 |
| P@20 | 0.15 | 0.25 | 0.25 | 0.25 | 0.25 |
| P@100 | 0.004 | 0.1 | 0.01 | 0.09 | 0.09 |
| Recall@5 | 0.01 | 0.028 | 0.1 | 0.1 | 0.1 |
| Recall@10 | 0.01 | 0.1 | 0.1 | 0.1 | 0.1 |
| Recall@20 | 0.1 | 0.16 | 0.2 | 0.2 | 0.1 |
| Recall@100 | 0.129 | 0.34 | 0.35 | 0.35 | 0.4 |
| MAP | 0.02 | 0.1 | 0.1 | 0.1 | 0.1 |
| MRR | 0.1 | 0.5 | 1 | 0.11 | 1 |
| NDCG@5 | 0 | 0.2 | 0.6 | 0 | 0.15 |
| NDCG@10 | 0 | 0.258 | 0.7 | 0 | 0.27 |
| NDCG@20 | 0.1 | 0.29 | 0.40 | 0.20 | 0.8 |
| NDCG@100 | 0.1 | 0.29 | 0.35 | 0.2 | 0.3 |
|  |  |  |  |  |  |

Findings:

One can clearly estimate the results of applying smoothing over the data which not only prevents zero probability values in the estimation but also provides a better estimate.

References:

Lucene Documentation.

Classmates.

StackOverflow

Wikipedia.

Professors Slides.

Github Pages, Blogs, and Tutorials repos.