Programming Assignment 2

Team: 7

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Read Queries and write ranking

Default BM25

```
enwiki:Political%20status%20of%20Transnistria Q0
6019abc315e3afd5250d01a8897bee49b1646249 1 15.614094 Group7-default
enwiki:Political%20status%20of%20Transnistria Q0
ab1b4b7b8281f43fa23e3d16880c9e36483291cb 2 14.294138 Group7-default
enwiki:Political%20status%20of%20Transnistria Q0
2b66112b9092a962ccd9b32870396df2c2d3a501 3 13.109041 Group7-default
enwiki:Political%20status%20of%20Transnistria Q0
369765ebd82deed7c6ba3692d5c7d474a4193fbf 4 10.471199 Group7-default
enwiki:Political%20status%20of%20Transnistria Q0
94715da76a2657b528bcef62af1cf5b4fe163815 5 9.319483 Group7-default
```

Custom function

```
enwiki:Political%20status%20of%20Transnistria Q0
2b266a28281a4c8cb0de3770e534182d2a15e999 1 5.0 Group7-custome
enwiki:Political%20status%20of%20Transnistria Q0
79c1315ad446856d05cff6325f2f3dd52ec60900 2 5.0 Group7-custome
enwiki:Political%20status%20of%20Transnistria Q0
56df8c80211225e9794d0b2ac6232df4337ba526 3 4.0 Group7-custome
enwiki:Political%20status%20of%20Transnistria Q0
6019abc315e3afd5250d01a8897bee49b1646249 4 4.0 Group7-custome
enwiki:Political%20status%20of%20Transnistria Q0
7d85d1b0718cb252141579248e8e0b409fcc5de6 5 4.0 Group7-custome
```

Evaluation with rec_eval

	presion at R	MAP	NDCG@20
default	0.597	0.599	0.735
custom	0.526	0.51	0.68

Precision at R

After take arithmatic mean over all queries, the precision at R:

for default score function is: 0.596

for custon score function is: 0.527

Precision at R by trec-eval tool:

The precision at R got from my code are same with trec-eval tool. The custon score function 0.527 and 0.526 is caused by round error.

Mean average precision

The mean average pricision:

default score function is : 0.86

Custom score function is : 0.74

The mean average precision is not same with result in trec-eval tool. I found that some average precisions are same with trec-eval's value, some are not same. Finally, the mean average precision is not same.

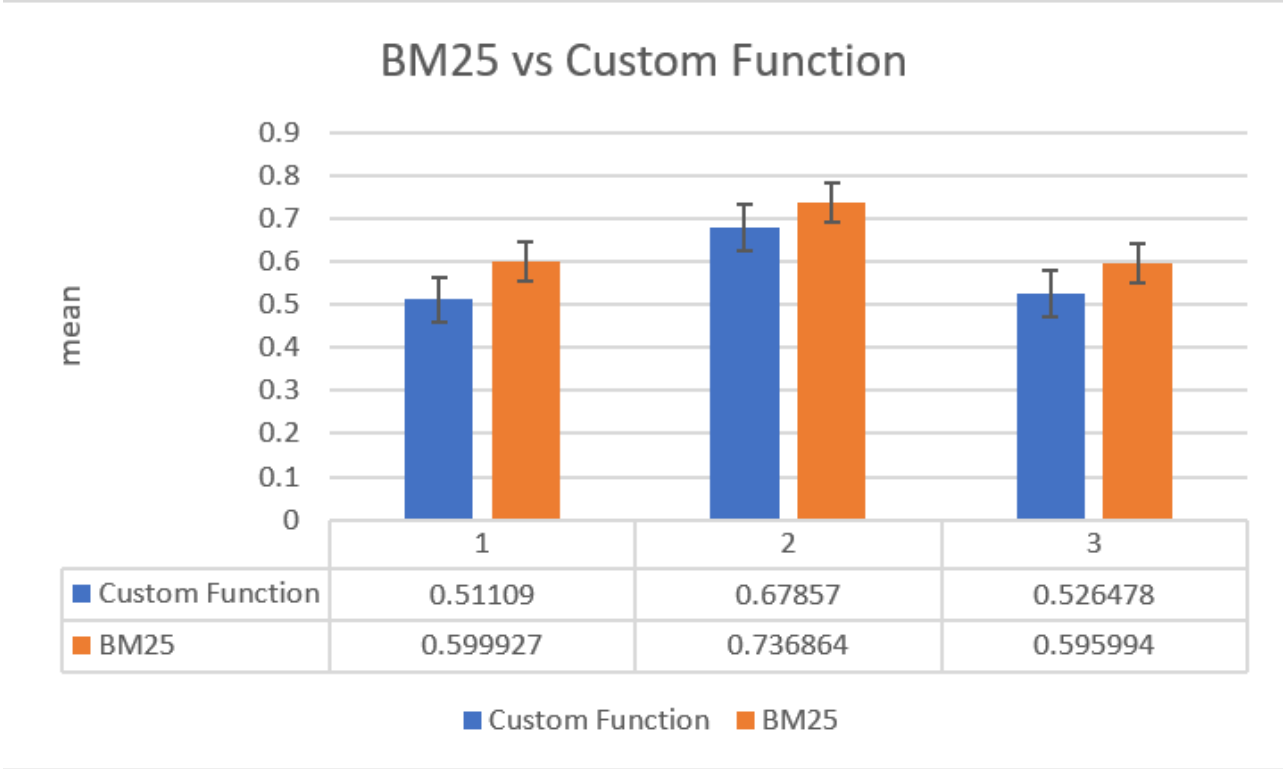This may casued by the retreived docs.

NDCG@20

NDCG@20

default score function is : 0.74
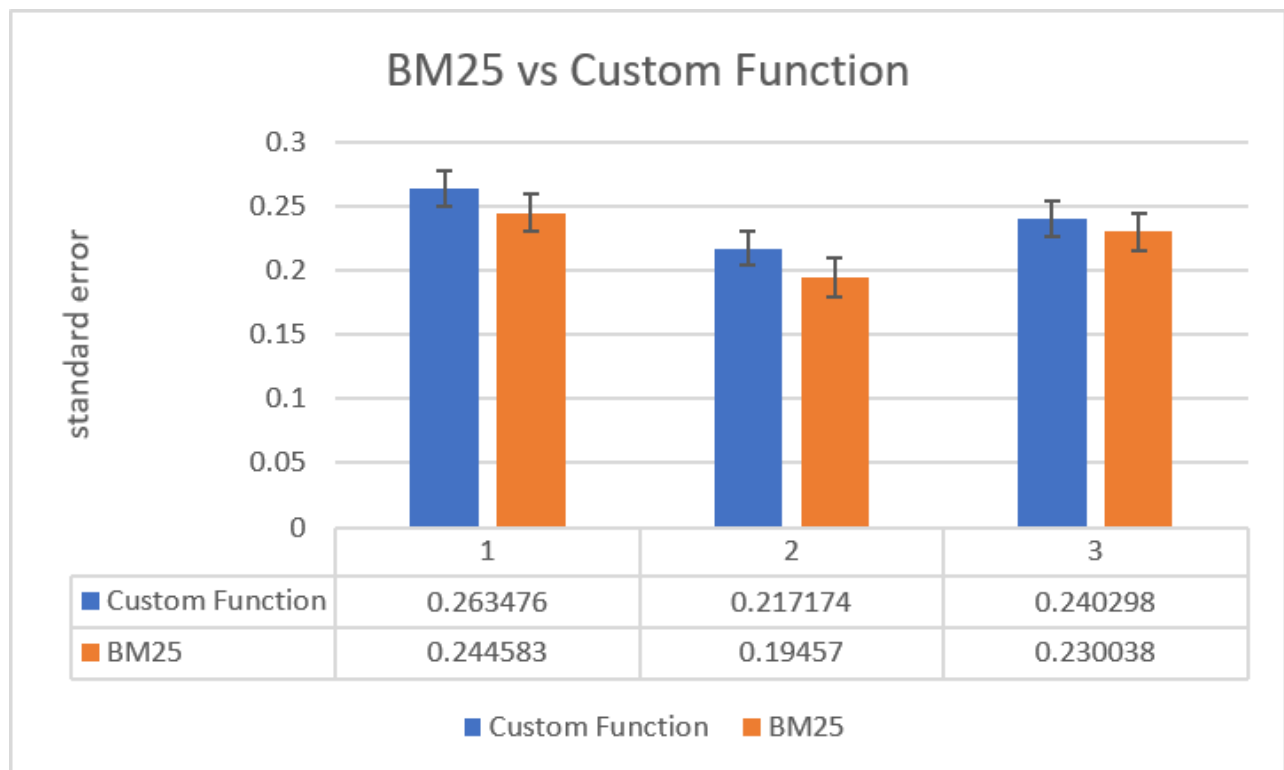
Custom score function is : 0.655

the NDCG@20 are not same with trec-eval tool's result. They are just a little bit difference.

the reason why my results is little different with trec-eval's result: in trec-eval, it is baed on Jarvelin and Kekalainen (ACM ToIS v. 20, pp. 422-446, 2002), the grade function is like 1=3.5,2=9.0,4=7.0, they will give gains 3.5, 9.0, 3.0, 7.0 for relevance levels 1,2,3,4 respectively Gains are allowed to be 0 or negative

Analysis

Mean vs MAP, NDCG & PatR

Figure caption:

	1	2	3
■ Custom Function	0.263476	0.217174	0.240298
■ BM25	0.244583	0.19457	0.230038

■ Custom Function   ■ BM25

Standard error vs MAP, NDCG & PatR

As the standard error graph showed, the standard errors of custom function on "map", "Rprec" and "ndcg@20" are all lower than the standard errors of BM25. That means the data from custom function is more stable. And from the mean graph we knew that the mean values of custom function on three measures are all higher than the values of BM25. And in all cases, the error bars were overlap. That means the difference is not significant. So we made a conculusion, custom function is better.