CSCE470 Written Assignment 2 (5 Points!)
Due by 11:59 pm on Oct. 25th

1. Short answers (1 Point! 1/4 Point per question):

a). Describe one advantage of statistical language models over the traditional vector space models for retrieval.

b). Use an example to explain the difference between an information need and a query.

c). What is pseudo relevance feedback? How to conduct query expansion?

d). What is position-bias of user clicks?

2. Problem Solving, Precision/Recall/F-measure (1 Point, 1/4 point per question.).

Suppose we have a query for which there are a total of 30 relevant documents in a collection. The collection contains 100 documents in total. For this query, our system has retrieved 10 documents, of which 5 are actually relevant.

a). What is the precision for this query?

b). What is the recall?

c). And the F-measure?

d). Finally, suppose you re-engineer your scoring system so that your search engine returned all 100 documents for all queries. Would this impact the precision for this query? Or the recall? Explain and be specific (use numbers to argue).

3. Problem Solving, NDCG, P@K, MAP. (3 Points!)

Consider an information need for which there are 5 relevant documents in the collection, which are judged as very relevant, relevant, somewhat relevant (VR, R, SR) vs. nonrelevant (N). For computation of NDCG, treat these ordinal values as the numbers (relevance values) 3, 2, 1, and 0, respectively. Contrast two systems running a query for the information need on this collection. Their top 10 results were judged for relevance as follows (the leftmost item is the top ranked search result):

System 1: VR, R, R, N, SR, VR, N, N, N, N
System 2: VR, VR, R, R, N, N, N, SR, N, N

a). (1 point) What is the NDCG of each system? Which has the higher NDCG? Show calculations. Note: For part b and c, we collapse distinctions to a 2-way relevance assessment (R vs. N).

b). (1 Point, 1/3 point per item.).

(b1) Is one list better than the other based on Precision @3?

(b2) Is one list better than the other based on Precision @5?

(b3) What is the MAP of each system? Which has a higher MAP?

c). (1 Point) Intuitively, which system seems better for web search? Why?