

National University of Computer and Emerging Sciences, Lahore Campus



Course: Information Retrieval
Program: BS(Data Science)
Duration: 25 Minutes
Paper Date: 15 March 2023
Section: BDS-6A v2
Exam: Quiz 3

Course Code: CS4051
Semester: Spring 2023
Total Marks: 8
Weight: 0
Page(s): 2
Roll No:

Q1) What is P@10 and Average Precision of following ranked list of documents? Suppose total number of relevant documents is 25. Leftmost document is top ranked document. [1+2 Marks]

N R N N R R N N R N R N N R

Q2) What is relationship of average precision and precision recall curve? Show complete derivation. [2 Marks]

Q3) Given the three-document corpus and a stop word list below, answer the following questions AFTER removing stopwords. [1+2 = 3 Marks]

d₁	information retrieval is process of index search retrieval
d₂	retrieval is used for evaluation of search results retrieval retrieval
d₃	evaluation in information in evaluation process search
Q	information retrieval
Stopwords	is , of, in, for, to

Calculate query likelihood score of given query for document d3. Remove stop words

a) No smoothing

b) Dirichlet smoothing ($\mu = 3$)

Solution:

$$\text{a) } P(\text{information}) * P(\text{retrieval}) \text{ in } d_3 = (1/5) * 0 = 0$$

$$\text{b) } P(\text{information}) = \frac{(5/(3+5)) * (1/5)}{(3/(3+5)) * (2/18)} = 0.167$$

$$P(\text{retrieval}) = \frac{(5/(3+5)) * (0/5)}{(3/(3+5)) * (5/18)} = 0.104$$

$P(\text{information}) * P(\text{retrieval}) \text{ in } d_3 \text{ using Dirichlet smoothing} = 0.167 * 0.104 = 0.017$

Name _____

Roll No _____

Section _____