29 May 2023 19:56

Relevant documents

 = the relevant documents

Ranking #1 

Recall	0.17	0.17	0.33	0.5	0.67	0.83	0.83	0.83	0.83	1.0
Precision	1.0	0.5	0.67	0.75	0.8	0.83	0.71	0.63	0.56	0.6

$$\text{Precision} = \frac{\text{Retrive relevant}}{\text{Total retrieved}}, \quad \text{Recall} = \frac{\text{Retrive relevant}}{\text{Total relevant}}$$

(Total relevant = 6)

(1)  → $\text{Precision} = \frac{1}{1}$, $\text{Recall} = \frac{1}{6}$

 → $\text{Precision} = \frac{1}{2}$, $\text{Recall} = \frac{1}{6}$

 → Precision = $\frac{2}{3}$, Recall = $\frac{2}{6}$

 → Precision = $\frac{3}{4}$, Recall = $\frac{3}{6}$

 → Precision = $\frac{4}{5}$, Recall = $\frac{4}{6}$

 → Precision = $\frac{5}{6}$, Recall = $\frac{5}{6}$

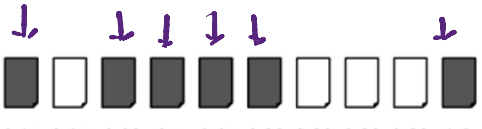
 → Precision = $\frac{5}{7}$, Recall = $\frac{5}{6}$

 → Precision = $\frac{5}{8}$, Recall = $\frac{5}{6}$

 → Precision = $\frac{5}{9}$, Recall = $\frac{5}{6}$

 → Precision = $\frac{6}{10}$, Recall = $\frac{6}{6}$

Average Precision →



Recall	0.17	0.17	0.33	0.5	0.67	0.83	0.83	0.83	0.83	1.0
Precision	1.0	0.5	0.67	0.75	0.8	0.83	0.71	0.63	0.56	0.6

→ we will calculate, where we get the actual retrieved items and average the precision at that time.

$$\text{Average Precision} = \frac{1 + 0.67 + 0.75 + 0.8 + 0.83 + 0.6}{6} = 0.78$$

Similarly for this → another query

Recall	0.0	0.17	0.17	0.17	0.33	0.5	0.67	0.67	0.83	1.0
Precision	0.0	0.5	0.33	0.25	0.4	0.5	0.57	0.5	0.56	0.6

$$\text{Average Precision} = \frac{0.5 + 0.4 + 0.5 + 0.57 + 0.56 + 0.6}{6} = 0.52$$

$$\text{Mean average Precision} = \frac{0.78 + 0.52}{2} \quad \text{(for 2 query)}$$

Another Example :-

relevant item = a, c, e, g, i

retrieved → a, b, c, d, e, f

→ a → $\frac{1}{1}(1)$, $\frac{1}{5}(0.2)$

b → $\frac{1}{2}(0.5)$, $\frac{1}{5}(0.2)$

→ c → $\frac{2}{3}(0.67)$, $\frac{2}{5}(0.4)$

→ c → $\frac{2}{3}(0.67)$, $\frac{2}{5}(0.4)$

d → $\frac{2}{4}(0.5)$, $\frac{2}{5}(0.4)$

→ e → $\frac{3}{5}(0.6)$, $\frac{3}{5}(0.6)$

f → $\frac{3}{6}(0.2)$, $\frac{3}{5}(0.6)$

Average Precision $= \frac{1}{3}\left(1 + \frac{2}{3} + \frac{3}{5}\right)$

$= \frac{(1 + 0.67 + 0.6)}{3} = 0.7555$

Average Recall $= \frac{1}{3}\left(\frac{1}{5} + \frac{2}{5} + \frac{3}{5}\right)$

$= \frac{1}{3} \times \frac{6}{5} = 0.40$