

Challenge: how to optimize?

- Evaluation metric recap

- Average Precision

- $$\text{AveP} = \frac{\sum_{k=1}^n (P(k) \times \text{rel}(k))}{\text{number of relevant documents}}$$

- DCG

- $$\text{DCG}_p = \text{rel}_1 + \sum_{i=2}^p \frac{\text{rel}_i}{\log_2 i}$$

Not continuous with respect to $f(X)$!

- Order is essential!

- $f \rightarrow$ **order** \rightarrow metric

