RUCIR at the NTCIR-16 Session Search (SS) Task

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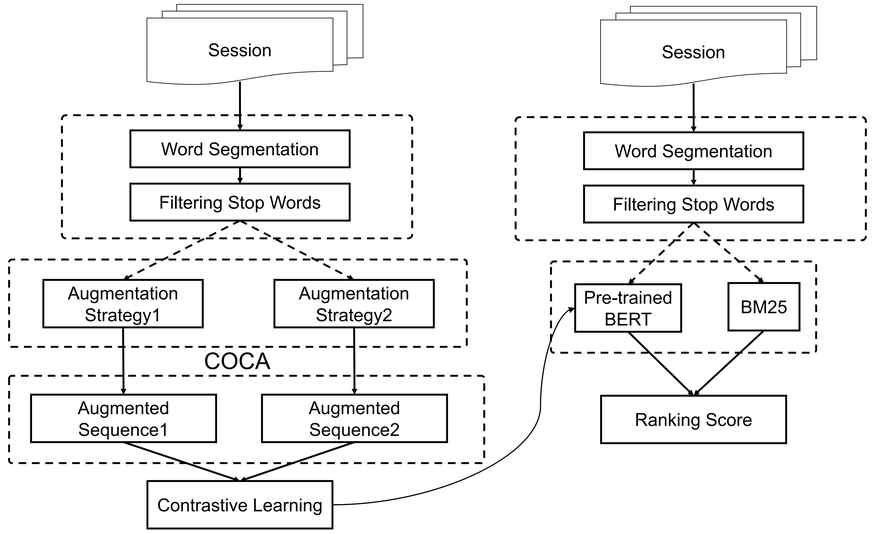
1. Workflow

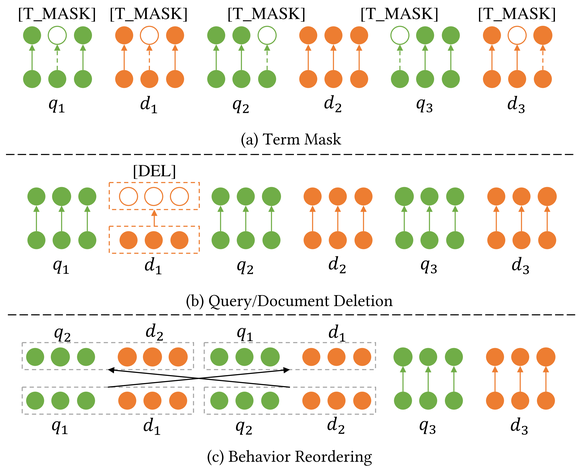


Using data augmentation strategies to generate possible variations from a search log.

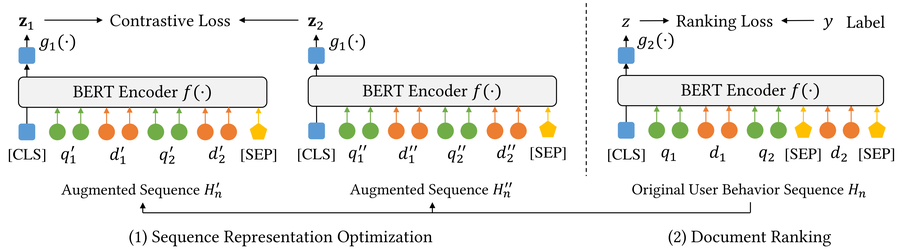
Based on the augmented data, we use contrastive learning to extract what is similar and dissimilar.

2. Main Model – Contrastive learning for context-aware document ranking (COCA)

2.1 Data Augmentation Strategy



2.2 Architecture of COCA



Compared to the existing approaches based on search logs, we expect that contrastive learning can better cope with the variations and generate more robust models to deal with new behavior sequences.

3. Using BM25 as Regularization

$$Score(candidate) = \alpha * Score_{COCA} + (1 - \alpha) * Score_{BM25}$$

$$\alpha = 0.67$$

4. Experimental Results

FOSS	NDCG@3	NDCG@5	NDCG@10
COCA+BM25	0.4783	0.4785	0.4939
COCA+U	0.5365	0.5406	0.5570
COCA+BM25+U	**0.5525**	**0.5623**	**0.5693**
POSS	**RsDCG**	**RsRBP**	
COCA	0.4355	0.5640	
COCA+BM25	0.4738	0.6281	
COCA+BM25+U	**0.5439**	**0.7466**	

Our best run performs better than all other runs.

The base model COCA already performs well.

Using BM25 as regularization and taking usefulness labels into account can both help the ranking performance.