

Low-Cost Evaluation with Graded and Preference Judgments and A Position-Aware Neural IR Model

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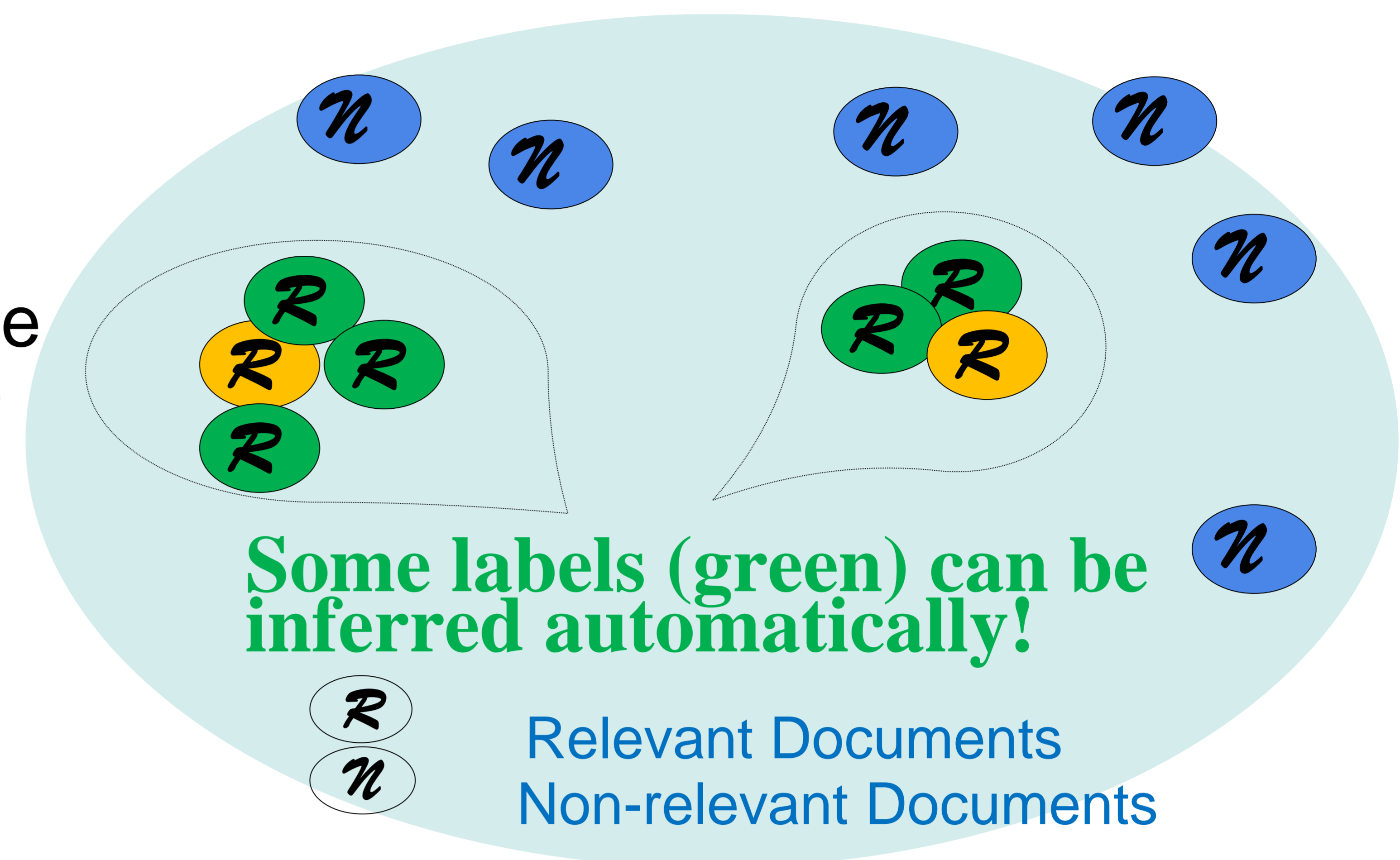
Low-cost Evaluation with Graded Judgments

Cluster hypothesis: documents that are relevant to the same query should be more similar with each other

Low-cost evaluation with cluster hypothesis: if the cluster hypothesis is satisfied, the assessments of document relevance can be done partially by automatic method

Two influential factors:

- A learning algorithm for selectively labeling [1]
- Suitable document representations [2]



Low-cost Evaluation with Preference Judgments

Preference judgments are known to be better but are too expensive

Crowdsourcing can be employed to reduce the judgment cost, but whether some important properties of preference judgments still hold is unclear [3]

Beyond crowdsourcing, **ties** can be employed to further reduce the number of judgments [4]



A

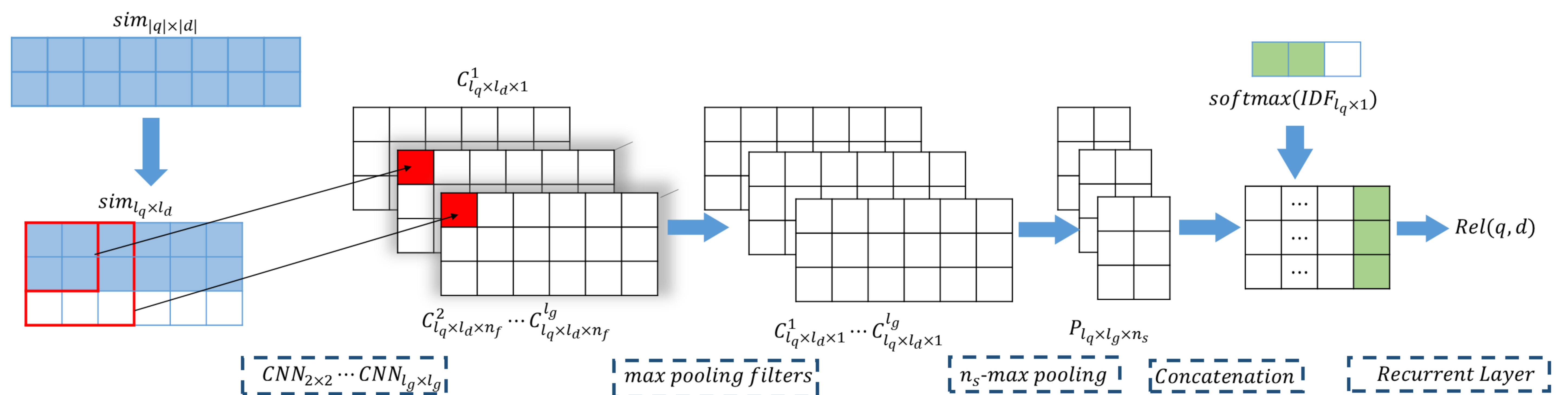


B

Which document is more relevant or they are equivalent to the query?

- Document A is more relevant
- Document A and B are equivalent
- Document B is more relevant

PACRR: A Position-Aware Neural IR Model



Positional information, like n-gram matching and query proximity, is crucial

Position-aware representation [5] and **neural IR model** [6] enabling to capture such positional information in modeling relevance matching are desirable

References

- [1] K. Hui, K. Berberich. Selective labeling and incomplete label mitigation for low-cost evaluation. SPIRE 2015
- [2] K. Hui, K. Berberich. Cluster Hypothesis in Low-Cost IR Evaluation with Different Document Representations. WWW 2016 (Companion Volume)
- [3] K. Hui, K. Berberich. Transitivity, Time Consumption, and Quality of Preference Judgments in Crowdsourcing. ECIR 2017
- [4] K. Hui, K. Berberich. Low-Cost Preference Judgment via Ties. ECIR 2017
- [5] K. Hui, A. Yates, K. Berberich, G. de Melo. Position-Aware Representations for Relevance Matching in Neural Information Retrieval. WWW 2017 (Companion Volume)
- [6] K. Hui, A. Yates, K. Berberich, G. de Melo. A Position-Aware Deep Model for Relevance Matching in Information Retrieval. arXiv preprint 2017.



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