Retrievability: An Independent Evaluation Measure

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ABSTRACT

Information Retrieval systems have traditionally been evaluated in terms of efficiency and performance. These aspects of retrieval systems, whilst very important, do not cover a crucial aspect of the system, the access it provides to the documents of the collection. Retrievability, a document centric evaluation measure, introduced by Azzopardi and Vinay, provides an alternative approach to evaluation [1]. Retrievability is the ease with which a document can be retrieved using a retrieval system. The more queries which retrieve the document, and the higher up the document is returned, the more retrievable it is. It can thus be used to describe how difficult it is to find documents in the collection given a particular configuration of a retrieval system. Unlike typical performance evaluations, performing a retrievability analysis can be done without recourse to relevancy judgements meaning there is no reliance on a test collection. This has major advantages when tuning a retrieval systems parameters as the tuning can be performed on the live collection.

Several applications of retrievability have been explored, however, many areas remain untouched or partially studied. Thus far, work in this PhD has explored the relationship between retrievability bias and performance in the context of ad hoc retrieval [2, 3, 5]. A benefit that would allow researchers in academia and industry to tune their system on their own collection and would save the resources of creating a test collection. Other aspects of retrievability also covered in this PhD have investigated the impact of query length on the estimation of Gini [6], investigating methods of computing retrievability more efficiently [4] and the application of various inequality metrics instead of the Gini Coefficient [7] when estimating the overall inequality of the system.

The remainder of this PhD aims to continue investigating the relationship between retrievability bias and performance, specifically to examine whether or not the relationship found thus far is generalisable to other domains and performance metrics. Applications of the theory of retrievability are also to be examined to see if there are alternative uses of retrievability to aid information retrieval outside of evaluation. Finally, due to the high cost of computing retrievability, another vein of research which is vital to moving retrievability more towards mainstream evaluation is to develop more efficient methods of estimating retrievability. Work in each of these areas will increase both the usefulness of retrievability by allowing demonstrating it can be applied to various domains and its attractiveness in both evaluation and general use for information retrieval.

Keywords

Retrievability; Bias; Effectiveness; Evaluation

1. REFERENCES

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