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Personalization of Context Information Retrieval Model via User Search Behaviours for Ranking Document Relevance

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Abstract : One major problem of most existing information retrieval systems (IRS) is that they provide even access and retrieval results to individual users specially based on the query terms user issued to the system. When using IRS, users often present search queries made of ad-hoc keywords. It is then up to IRS to obtain a precise representation of user's information need, and the context of the information. In effect, the volume and range of the Internet documents is growing exponentially and consequently causes difficulties for a user to obtain information that precisely matches the user interest. Diverse combination techniques are used to achieve the specific goal. This is due, firstly, to the fact that users often do not present queries to IRS that optimally represent the information they want, and secondly, the measure of a document's relevance is highly subjective between diverse users. In this paper, we address the problem by investigating the optimization of IRS to individual information needs in order of relevance. The paper addressed the development of algorithms that optimize the ranking of documents retrieved from IRS. This paper addresses this problem with a two-fold approach in order to retrieve domain-specific documents. Firstly, the design of context of information. The context of a query determines retrieved information relevance using personalization and context-awareness. Thus, executing the same query in diverse contexts often leads to diverse result rankings based on the user preferences. Secondly, the relevant context aspects should be incorporated in a way that supports the knowledge domain representing users' interests. In this paper, the use of evolutionary algorithms is incorporated to improve the effectiveness of IRS. A context-based information retrieval system that learns individual needs from user-provided relevance feedback is developed whose retrieval effectiveness is evaluated using precision and recall metrics. The results demonstrate how to use attributes from user interaction behavior to improve the IR effectiveness.

Keywords : context, document relevance, information retrieval, personalization, user search behaviors
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