Issues of Applying Collaborative Filtering Recommendations in Information Retrieval

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My interest in the "Beyond Personalization 2005" workshop is the application of collaborative filtering recommendations in web information retrieval systems.

Collaborative filtering recommender systems are normally found in the domains of movies, music, merchant products, restaurants, and USENET newsgroup messages. One common feature of these domains is that the item space is relatively small, compared to the number of documents available on the web. While the collaborative filtering methods may work well for small item spaces, it is difficult to be applied in the web information retrieval. Web information retrieval is a domain with huge amount of items/documents. In addition, the value of each item to the user's interest is up to a particular person who needs it. Although there are some recommender systems for web search, most of these systems are based on content-based approaches, not the collaborative filtering approach [3, 4].

On the other hand, information retrieval is a natural domain for the use of collaborative filtering recommendations. As part of the scientific research process, collaboration in information seeking is a common practice. People often seek recommendations from colleagues or friends for the needed information [2, 5]. As the number of digital documents increases rapidly on the internet, the demand for this collaboration becomes more and more urgent in order to help people find relevant information. Collaborative filtering recommendations should find a good fit in this field.

However, different from other domains, use of the collaborative filtering for information retrieval tasks needs to meet several challenges. In addition to the rating sparsity and ramp-up problems typical in collaborative filtering systems, as pointed out by many researchers [e.g., 1], we also need to address the issues of 1) What to recommend (relevant documents or the knowledge to find and identify the relevant documents) and 2) what kind of users would like to have recommended relevant documents.

We have recently worked on a project to explore the effectiveness of collaborative filtering recommendations for web search tasks. We built a pilot user interface system that can display previous users' relevant search results, as well as the associated search queries. The system can use one of the publicly available Internet search engines as the information retrieval system and allow experimental participants to search on a set of pre-defined search topics. While the project is still on-going, part of our preliminary results show that users prefer more other people's queries to their relevant judgments or relevant items. This implies that when applying collaborative filtering recommendations for web search tasks, the priority of what to be recommended might be given to the search knowledge of finding relevant documents, rather than the documents themselves. The reason may be that the relevance judgment (rating) is so subjective that people trust only their own judgment. This is particularly true with the trained information searchers. A detailed description of this research will be presented elsewhere.

In summary, web information retrieval provides both an opportunity and challenges for applying collaborative filtering recommendations. The issues discussed in this statement may be related to all topics concerned by this workshop. I hope at the workshop I can learn other people's experiences and thoughts, and hope my research can contribute to the filed as a whole.

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