Proposal of an exchange in the context of the PROMISE project: Studying machine learning approaches for inferring relevance assessments from logs

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The visit is planned for May, 2011.

The purpose of the visit is the investigation of machine learning methodologies for analyzing the evidence of document relevance from log data.

Log recording and analysis allows evaluation assessment and opens opportunities to improvements and enhanced new services. Indeed, the benefits of logging are numerous, including improving performance by recording effective evaluation data, helping in designing and testing of user interfaces, and better allocation of resources. Log analysis provides a method of collecting data from a great number of users. Logs are a reasonable and non-intrusive means of collecting user–system interaction data about the information-searching process from a large number of searchers [1]. Machine learning algorithms can successfully exploit information encoded in the actions the user perform to improve tasks such precision prediction and query triage.

The work that will be carried out during the visit will be focused on the analysis of machine learning methods for the gathering evidence about document relevance from the log data. This activity will be carried out in the context of the PROMISE[1] network of excellence, in particular WP4 (Evaluation Metrics and Methodologies), Task 4.1 – Generating Ground Truth from Log Files.

The aim of this exchange is to focus on the problem of inferring relevance assessments from transaction log files. The first step will be to study similar approaches in literature. For example, [2] which study the correlation of the quality of retrieval results with the distribution in time of the documents retrieved. In [3], a relevance modeling solution to this estimation problem was adopted in order to look at the temporal information each of the top retrieved documents provide and weight this information according to the documents probability of relevance. The evaluations of the studied methods will be carried out by means of standard log datasets.
Some of the datasets that will be used are made available by the LogCLEF[2] Lab at CLEF 2011. This will guarantee standard datasets which have been used in the past years and that will make the results of this study comparable to others; this study will also take adgvantage of the experience of UvA and UBER, both partners of PROMISE, as participants at LogCLEF.

The research exchange is expected to last five-six working days. There are currently two possible options: 12-19 May (end of the second week-beginning of the third week of May), 9-14 May (second week of May).

References
[1] Jansen, B.J.: Search log analysis: What it is, what's been done, how to do it. Library
& Information Science Research 28(3), 407 – 432 (2006). DOI DOI:10.1016/j.lisr.2006.
[2] Jones, R., Diaz, F.: Temporal profiles of queries. ACM Transactions on Information Systems 25 (3) (2007)
[3] Lavrenko, V., Croft, W.B.: Relevance-based language models. In Proceedings of the 24th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval, September 9-13, 2001, New Orleans, Louisiana, USA. ACM (2001), pp. 120–127.

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[1] http://www.promise-noe.eu/

[2] http://www.promise-noe.eu/mining-user-preference