

Personalizing Information Retrieval Using Task Stage, Topic Knowledge, and Task Products

Jingjing Liu

Rutgers University

Dissertation Director:

Nicholas J. Belkin

Personalization of information retrieval tailors search towards individual users to meet their particular information needs by taking into account information about users and their contexts, often through implicit sources of evidence such as user behaviors and contextual factors. The current study looks particularly at users' dwelling behavior, measured by the time that they spend on documents; and several contextual factors: the stage of users' work tasks, task type, users' knowledge of task topics, to explore whether or not taking account of task stage, task type, and topic knowledge could help predict document usefulness from the time that users spend on the documents. This study also investigates whether or not expanding queries with important terms extracted from task products and useful pages improves search performance. To these ends, a controlled lab experiment was conducted with 24 student participants, each coming three times in a two-week period to work on three sub-tasks in a general work task. Data were collected by logging software that recorded user-system interaction and questionnaires that elicited users' background information and perceptions on a number of aspects. Observations in the study and examinations of the data found that the time users spent on documents could have three different types: total display time, total dwell time, and decision time, which had different roles in working as a reliable indicator of document usefulness. Task stage was found to help interpret certain types of time as reliable indicators of document usefulness in certain task types, so was topic knowledge, and the latter played a more significant role when both were available. This study contributes to a better understanding of how information seeking behaviors, specifically, time that users spend on documents, can be used as implicit evidence of document usefulness, as well as how contextual factors of task stage, topic knowledge, and task type can help interpret time as an indicator of usefulness. These findings have theoretical and practical implications for using behaviors and contextual factors in the development of personalization systems. Future studies are suggested on making use of these findings as well as research on related issues.

Current Affiliation:

Department of Information and Library Science

Southern Connecticut State University

New Haven, CT, USA 06515

liuj5@southernct.edu