

## Characterizing and Evaluating Whole Session Interactive Information Retrieval

This research addresses a newly important issue in contemporary life. As people become more accustomed to using the Internet and the Web for finding information, they are increasingly using it for addressing ever more complex and personally important information problems. However, current Web search engines have been developed and specifically tuned to helping people find simple, mostly factual information, usually as a single response list to a single, simple query. But when they try to address the new types of problems, people need to engage in longer *information seeking episodes* than the one query-one response paradigm assumes, and to engage in many activities other than just clicking on a search result, such as reading, evaluating, comparing and using information. Current Web search engines do not support this model of information seeking and use at all well. This research addresses this problem by studying why people engage in such complex information seeking (that is, the reasons that motivate them to do this), and what they try to accomplish during the course of an information seeking episode (their search intentions), in order to design and evaluate new types of search engines for supporting people in accomplishing the goals that have led them to engage in information seeking. This means, in essence, being able to *personalize* system support to the individual, and the individual's goals and context. Specifically, this research will establish relationships between people's behaviors during an information seeking episode, the motivating goals that led them to engage in information seeking, and their specific intentions at any point in an information seeking episode, so that systems will be able to predict how best to support the individual person in addressing their information problem, and to design and evaluate methods for accomplishing such support.

Little is known about the relationships between observable searcher behaviors and the higher-level intentions which a searcher wishes to accomplish at any particular point during an information seeking episode, nor are there good methods or measures for evaluating interactive information retrieval system support for whole information seeking episode evaluation, or for evaluation of support for any particular searcher intention during an information seeking episode. This project addresses the problems of: recognizing searcher intentions during the course of an information seeking episode through observation of searcher behavior; developing methods and measures for evaluation of interactive information retrieval system support for those intentions during the course of an information seeking episode; and, developing measures and methods for evaluating the performance of the interactive information retrieval system in support of the entire information seeking episode. The observed behaviors include, e.g., eye-fixations, mouse movements, clicking, following links, page transitions and query reformulations. The project proceeds in three stages. First, it builds on and extends the results of previous and current research in relating observable searcher behaviors to high-level searcher intentions, with the goal of characterizing and segmenting information seeking episodes according to these behaviors and their associated intentions, and to develop models of information seeking episode behaviors. This is conducted both with previously collected data, and on data derived from a new user studies. Stage 2 collects data on “real” information seeking episodes, through a browser plug-in logging tool, and interviews with participants. These data are analyzed to discover new motivating tasks, to identify new information seeking episode intentions, and to enhance the models of information seeking episode behaviors. Stage 3, including a further study of people conducting complex

information seeking tasks, identifies the goals of intentions during the information seeking episode and for the whole information seeking episode, and develops and tests measures of support for those goals, and methods for gathering the data required for applying the measures. Stage 3 also investigates the application of the behavior models for simulation of information seeking episodes.