

## **ABSTRACT OF THE DISSERTATION**

### **SUPPORTING MULTIPLE INFORMATION-SEEKING STRATEGIES IN A SINGLE SYSTEM FRAMEWORK**

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This study explores issues in information retrieval (IR) systems with special attention to information-seeking strategies (ISSs), the relation of ISSs to IR system design, and how to support multiple ISSs within a single system framework. It addresses the observation that people engage in a variety of ISSs within a single information-seeking episode. This study proposes to construct and evaluate an interactive IR (IIR) system which incorporates different IR support techniques to adaptively support multiple ISSs. Based on an information-seeking episode model (Belkin, 1996), and a multi-faceted classification scheme of information behaviors (Cool & Belkin, 2002), it was conducted in a series of three consecutive steps. Firstly, four experimental systems were designed and implemented with each tailored to one of the following IR support techniques: database summary, clustered retrieval results, table of contents navigation, and fielded query. A within-subjects experiment was conducted to compare each experimental system to its respective generic baseline system, which was constructed by following the

current standard model with a specific query input and a ranked list of search results. Results indicated that the experimental systems were superior to the baseline systems. Secondly, information-seeking dialogue structures developed in the MERIT system (Belkin, Cool, Stein & Thiel, 1995) were adopted to guide the design of the IIR system. The dialogue structures were built based on the Conversational Roles (COR) model (Sitter & Stein, 1992). Finally, an experimental system which supported multiple ISSs was built by incorporating the four IR support techniques and the dialogue structures. This experimental system was tested in a within-subjects experiment in comparison to a generic baseline system. The experiment, with 32 subjects each searching on eight different topics, indicated that using the experimental system resulted in significantly better performance, significantly more effective interaction, and significantly better usability than the baseline system. These results demonstrated that it is possible to support quite different information-seeking behaviors within a single system framework which searchers can understand and use effectively. A principled approach to designing such systems needs to be further investigated.