



The concept of information need and its operationalization in CHIIR research

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ABSTRACT

One of the most utilized concepts in CHIIR research is ‘information need’, which has been used as part of research designs in both qualitative and quantitative studies, either as an integral element of experiments and evaluations or as an explanatory aspect of information searching. Its definitions and operationalizations are likewise many and they often remain vague hindering the possibility to credibly compare findings. This tutorial will help participants to use the concept more precisely and appropriately in their own research. The tutorial consists of talks by experienced researchers combined with small group and plenary sessions.

CCS CONCEPTS

• **Human-centered computing** → Human computer interaction (HCI); HCI theory, concepts and models; Interaction design; Interaction design theory, concepts and paradigms; Human computer interaction (HCI); HCI design and evaluation methods; User studies.

KEYWORDS

Information need, User studies, Task-based information searching, Contextual information seeking

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1 INTRODUCTION

CHIIR research focuses on user-centred approaches to the design and evaluation of systems for information access, seeking, retrieval, and use. This means that many concepts are utilized in a variety of settings and for a variety of purposes. One of the most utilized

concepts in CHIIR research, as in information studies in general, is “information need”. In 1968 Taylor [1] stated that whereas automation facilitates many aspects of information seeking, the act of negotiation of information needs to answerable questions is difficult. It still is, especially when information needs must be translated into forms that are answerable by information systems [2, 3]. In addition, personal and social as well as situational and material aspects play a role for construction of information needs [4] making them difficult to compare and to answer.

Information needs have been used as part of CHIIR research designs. Importantly, they are often embedded into search tasks to evaluate systems and differences in information needs are often the motivation to create new types of systems or to have systems to interact in different ways. Information needs may also be critical components in qualitative studies of how people interact with information. However, the use of the concept is typically atheoretical with little consideration over its definition in its application, let alone in comparison with other research work. This limits the power of information need as a useful research tool. This tutorial aims to provide a more robust and usable understanding of information need as a concept for CHIIR research.

2 SYLLABUS

The tutorial will consist of three sessions. In the first session, the experienced CHIIR researchers will shortly introduce different ways to understand and use information need in CHIIR research. The talks on the following topics aim to clarify the relation between different information need definitions and their empirical applications:

- The history of information needs since Robert Taylor’s seminal conceptualization
- Information needs in light of different epistemological orientations: system, individual, social and material perspectives
- Information needs and their relation to emotion and language
- The difference between naturalistic and simulated information needs
- The embedded information needs in different levels of work

The second session takes a format of round table discussions where the participants present and discuss their experiences of using the concept of information need in their own research work; what issues they have encountered in using the concept and what



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they feel needs further clarification in their application of the concept. The groups are formed to fit the participants' projects. The tutors will facilitate the discussions and offer their expertise to guide the participants in their use of the concept as part of their research designs. The final session will be formed as a plenum discussion where the round table discussions are considered in an aggregated level with focus on the insights that the participants have gained during the event.

3 TUTORIAL OUTCOMES

The centrality and inherent elusiveness of information needs make the topic equally interesting for all conference attendees, from experienced to early-career researchers as well as for researchers crossing-over from related disciplines. This tutorial aims to increase the participants' awareness of different ways of defining the concept and their consequences for operationalizing it in research and help them to make better use of the concept in their own research, in both real-world and experimental settings. As a community, CHIIR will benefit from a more precise and specified use of one of its main concepts. Following learning outcomes are aimed at:

- in-depth understanding of the multiple meanings of information need in CHIIR research
- ability to define and operationalize the concept for own research projects, and
- ability to credibly compare own results based on the concept of information need with research findings by others.

4 PRESENTERS

The presenters are senior researchers in CHIIR topics and have profound experience in using “information needs” as part of their theoretical and empirical research work:

Katriina Byström is a Professor in Library and Information Science. Her research focusses often on the ways information flows in real-life workplaces and enables collaboration and work-task performance, with help of information systems alongside with other types of information resources. Her early work has demonstrated the importance of the underlying work-task for the construction of information activities, including the impact of task complexity and individual experience on perceived information needs and the assessing of relevance of information sought. Her later work has incorporated aspects outside individual cognition. She has examined information needs as a construct within socio-cultural practices as well as investigated the influence of material preconditions on information needs.

Sanna Kumpulainen holds a position of associate professor. Her research centres around human-information interactions within task-oriented contexts. Her research delves into the processes by which people seek an understanding of their current tasks and how this understanding influences their activities, encompassing information retrieval, the selection of relevant information, and its utilization. Her investigations have extended to diverse real-world work environments, such as molecular medicine, municipal administration, and historical research settings. Her current research interests involve exploring the information needs linked to images and visual information, and how advanced AI techniques

are used to support these needs within socio-technical research environments.

Nils Pharo is a Professor in Knowledge Organization and Information Retrieval. His research centers around information searching and interactive IR studies. Pharo has been particularly interested in combining factors from information seeking and information searching, to identify how contextual factors influence users' interaction with information systems. He has conducted studies using simulated work tasks as well as real information needs. His studies have been performed on the Web in general as well as on information systems that use XML and RDF for semantic structuring of content and metadata. Currently Pharo is involved in the European research project Polyvocal Interpretations of Contested Colonial Heritage, where he is part of a team investigating how different user groups search audiovisual archives.

Ian Ruthven is a Professor of Information Seeking and Retrieval. His research is focussed on the human experience of interacting with information, particularly on how people find information. This involves understanding how people seek information, designing appropriate interactive search systems, and developing human-focussed approaches for evaluating information systems. He has conducted this research in various contexts including health, migration, and cultural heritage. He has published many papers looking at how information needs arise in people's everyday lives, and documenting these needs and how they are resolved. He has published also on the language people use to describe their information needs, the emotional and social aspects of information need and its resolution, and most recently on information need as an evolved response to danger.

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