Report on IIiX'12: the Fourth Information Interaction in Context Symposium

Norbert Fuhr[1] and Jaap Kamps[2] and Wessel Kraaij[3] and Suzan Verberne[3]

[1] University of Duisburg-Essen, Germany
[2] University of Amsterdam, The Netherlands
[3] Radboud University, Nijmegen, The Netherlands

Abstract

This paper reports on the fourth Information Interaction in Context (IIiX) Symposium held in Nijmegen, the Netherlands in August 2012. It featured a lively program with 3 keynotes, 25 long papers with oral presentation, 20 short papers with poster presentation, a doctoral consortium, a workshop on human-computer information retrieval, and was followed by a summer school on information foraging. IIiX'12 is an ACM and ACM SIGIR in cooperation conference with its proceedings published by the ACM.

1 Introduction

The fourth symposium on *Information Interaction in conteXt* (IIiX) followed three prior and successful IIiX symposia in Copenhagen in 2006 [4], London in 2008 [8], and New Brunswick in 2010 [7]. The IIiX symposium series explores the relationships between and within the contexts that affect information retrieval (IR) and information seeking, how these contexts impact information behavior, and how knowledge of information contexts and behaviors improves the design of interactive information systems.

The intention of IIiX is to foster an integrated approach to information access by bringing together members of the research communities in information seeking behavior (Behavior Track), user interface design for IR systems (Interface Track), interactive IR (Interaction Track), and IR system design (System Track). As it turned out, submissions were often integrating two or more of these perspectives represented by the tracks.

IIiX'12 turned out to be a lively single track event. Researchers in different areas—those working on people-centered research in schools of information, and those working on systems and user interfaces in computer science—had constructive discussions. And many new ideas were born.

2 Conference

In this section, we discuss the organization, the keynotes, the contributed papers, and the attendance of IIiX'12.

2.1 Organization

The fourth IIiX was chaired by Jaap Kamps (University of Amsterdam) and Wessel Kraaij (Radboud University and TNO) and held at the campus of the Radboud University in Nijmegen, the Netherlands,

The program chair was Norbert Fuhr (University of Duisburg-Essen), and the review and selection process was coordinated by four area chairs: Elaine Toms (Sheffield University) was in charge of the Behavior track, Kalervo Järvelin (University of Tampere) ran the Interaction track, Max Wilson (University of Nottingham) was leading the Interface track, and Paul Thomas (CSIRO) oversaw the Systems track. From the 40 papers submitted to the conference, 13 belonged to the behavior track, 14 to the interaction track, 8 to the interface track and only 5 to the systems track. Although many submissions touched upon multiple areas, this distribution shows a clear focus on behavior and interaction, the "core" areas of IIiX. The PC selected 25 papers to be presented at the conference.

The poster chair was Stefan Rüger (The Open University). A total of 33 short papers were submitted, of which 20 were accepted by the PC to be presented in the poster session.

The accompanying doctoral consortium was chaired by Hideo Joho (University of Tsukuba) and Birger Larsen (Royal School of Library and Information Science). A total of 9 students applied, and 7 were accepted.

We were very pleased that IIiX'12 was followed by the co-located EuroHCIR workshop bringing additional researchers from academia and industry to IIiX. IIiX'12 and EuroHCIR were followed by the second EU Intensive Program "Information Foraging," with many lecturers from within the IIiX community.

2.2 Keynotes

IIiX'12 featured three keynote lectures by Peter Ingwersen, Diane Kelly and Dan Russell.

2.2.1 Reranking on Citations and References

PETER INGWERSEN (Royal School of Library and Information Science, Copenhagen, Denmark) gave a keynote entitled "Citations and references as keys to relevance ranking in interactive IR" [3]. According to the principle of Polyrepresentation, bibliographic references in scientific documents as well as citations to documents have the potential of serving as useful features for re-ranking of retrieved documents. References (and thus citations) can be seen as footprints of information interaction, because of the behavioral conventions built in to the scientific communication and publication process. They are manifestations of degrees of utility of methods, results and ideas made earlier on by other scientists. The use of references in IR has been demonstrated to improve retrieval performance,whereas the number of citations has not provided similar improvements.

2.2.2 Slow Search Movement

DIANE KELLY (University of North Carolina, Chapel Hill, USA) gave a keynote entitled "Cognitive consequences of search" [6]. For some time now, the general goal of information retrieval (IR) has been to present a user with an optimally ranked set of results as quickly as possible. At first glance, things seem to be working well: users often find what they need on the first search results page, they do not have to create their own queries or read

through multiple pages of text, and soon they may not even have to think of their own information needs. Researchers document success by showing reductions in time and amount of interaction, and increased user satisfaction, but do these measures really allow researchers to understand the impact of search?

2.2.3 Search Literacy

DAN RUSSELL (Google) gave a keynote entitled "What does it mean to be literate in the age of Google?" [9]. What does it mean to be literate at a time when you can search over billions of texts in less than 300 milliseconds? Although you might think that "literacy" is one of the great constants that transcends the ages, the skills of a literate person have changed substantially over time as texts and technology allow for new kinds of reading and understanding. Knowing how to read is just the beginning of it—knowing how to frame a question, pose a query, how to interpret the texts that you find, understand the information in context, how to organize and use the information you discover, how to understand your metacognition—these are all critical parts of being literate as well.

2.3 Papers and Posters

Below, we will discuss only the papers and posters nominated for the best paper and best poster awards. For details of the other papers, we gladly refer to the IIiX'12 proceedings [5], which are available from the ACM digital library at `http://dl.acm.org/citation.cfm?id=2362724`.

There were a total of 25 papers presented in 8 sessions:

- Finding books
- Expressing and understanding in interaction session
- Search user interface design
- Queries in context
- Web search behavior
- Wikipedia and cultural heritage search behavior
- Representations, visualizations and behavior
- Information seeking in specific applications

In addition 20 short papers were presented in a poster session.

2.3.1 Best Poster

Nominated for the best poster award were the following three posters:

- Wan-Ching Wu, Diane Kelly, Ashlee Edwards and Jaime Arguello: Grannies, tanning beds, tattoos and NASCAR: Evaluation of search tasks with varying levels of cognitive complexity [13].
- Carsten Eickhoff, Leif Azzopardi, Djoerd Hiemstra, Franciska de Jong and Arjen De Vries: EmSe: Initial Evaluation of a Child-friendly Medical Search System [1].
- Alan Said, Brijnesh Jain, Andreas Lommatzsch and Sahin Albayrak: Correlating Perception-Oriented Aspects in User-Centric Recommender System Evaluation [11].

The best-poster prize was awarded to "Grannies, tanning beds, tattoos and NASCAR" by Wan-Ching Wu, Diane Kelly, Ashlee Edwards and Jaime Arguello [13]. The jury reported the following. This paper presents results of a study designed to evaluate a set of search tasks that were developed for use in interactive information retrieval (IIR) studies. The authors created 20 search tasks using five levels of cognitive complexity and four domains, and conducted a laboratory evaluation of these tasks with 48 undergraduate subjects. The analysis of their results established, amongst other things, a correlation between cognitive complexity and the number of issued queries, the number of clicks on each results, the number of URL viewings and the time taken to complete the task. The development of search tasks is a challenging part of designing an interactive information retrieval study, and has been taken forward in a principled way supported by theory. All in all an undisputed excellent poster.

2.3.2 Best Paper

Nominated for the best paper award were the following three posters:

- Jonas Fransson: Intention and task context connected with session in a cultural heritage collection [2].

- Miamaria Saastamoinen, Sanna Kumpulainen and Kal Järvelin: Task Complexity and Information Searching in Administrative Tasks Revisited [10].

- Pierre Tirilly, Xiangming Mu, Chunsheng Huang, Iris Xie, Wooseob Jeong and Jin Zhang: On the consistency and features of image similarity [12].

The best-paper prize was awarded to "On the consistency and features of image similarity" by Pierre Tirilly, Xiangming Mu, Chunsheng Huang, Iris Xie, Wooseob Jeong and Jin Zhang [12]. The jury commented the following. The paper describes a well-wrought experiment to investigate salient features of similarity between images as understood by human test subject and pulls the study all the way from a lab experiment to a discussion of relevance for implemented systems. Its starting points are novel, its methodology is sound, its results real, its projections reasonable. This paper is likely to have impact on research in this area in the future. This reviewer will enjoy reading it again and will think carefully of how it might provide inspiration for future implemented systems and further studies. This work raises the level of abstraction of image search systems from its current myopic state; it also, through suggesting novel features, shows how research on information systems can be more than optimizing categorization systems using the same features as anyone else.

2.4 Attendance

IIiX'12 received a record number of 121 registrations, broken down to 93 IIiX and 73 Euro-HCIR registrations (so 45 combined registrations). The breakdown per country, sorted by decreasing frequency, is the following: Netherlands (23), Germany (12), USA (10), Denmark (9), United Kingdom (9), Finland (7), Australia (3), Japan (3), Canada (2), Hungary (2), Italy (2), Norway (2), Spain (2), Taiwan (2), Belgium (1), France (1), Indonesia (1), South Africa (1), South Korea (1), and Sweden (1). The Dutch participation included several sponsors and volunteers, showcasing the transfer effect of organizing a conference like IIiX on national participation.

Figure 1: Word cloud of tweets during IIiX'12 (both `#iiix2012` and `#eurohcir`).

During IIiX'12 there was quite some activity in the social media, and in particular on Twitter. We tracked all the messages containing the conference hashtag `#iiix2012`, that mention the user `@iiix2012`, and the messages about the EuroHCIR workshop containing the hashtag `#eurohcir`. This leads to the following statistics: 1,219 tweets were sent, by 71 distinct users, 574 (47%) of the tweets were retweets, and 167 (14%) of the tweets contain links. The shared links contain mostly pictures of the conference, links to presentations, papers and project home pages.

From the word cloud in Figure 1 we can see that "search" is the most mentioned word, followed by "now." Many tweets are about the talk that is going on at that moment. Diane Kelly's keynote generated the largest amount of tweets: 67. This can be seen from "Diane" being mentioned in the word cloud of Figure 1. There is also a clear peak in Tweets during her keynote at 4pm on August 23, as can be seen in Figure 2 showing of Twitter volume of throughout the conference.

Interestingly, the most active user, `@gingdottwit` sent out 506 tweets, no less than 42% of the total number of tweets! The top 5 most active users together produced 75% of all tweets. So, if you want a good coverage of your conference on Twitter, be sure to invite some of the super active Twitter users.

3   Satellite Events

In this section, we discuss the doctoral consortium, the workshop on human computer information retrieval, and the summer school on information foraging directly following IIiX'12.

3.1   Doctoral Consortium

The Doctoral Consortium aimed to provide a constructive setting for presentations and discussions of doctoral students' research projects with senior researchers and other participating students. The two main goals of the Doctoral Consortium were: 1) to advise students regarding current critical issues in their research; and 2) to make students aware of the strengths and weakness of their research as viewed from different perspectives.

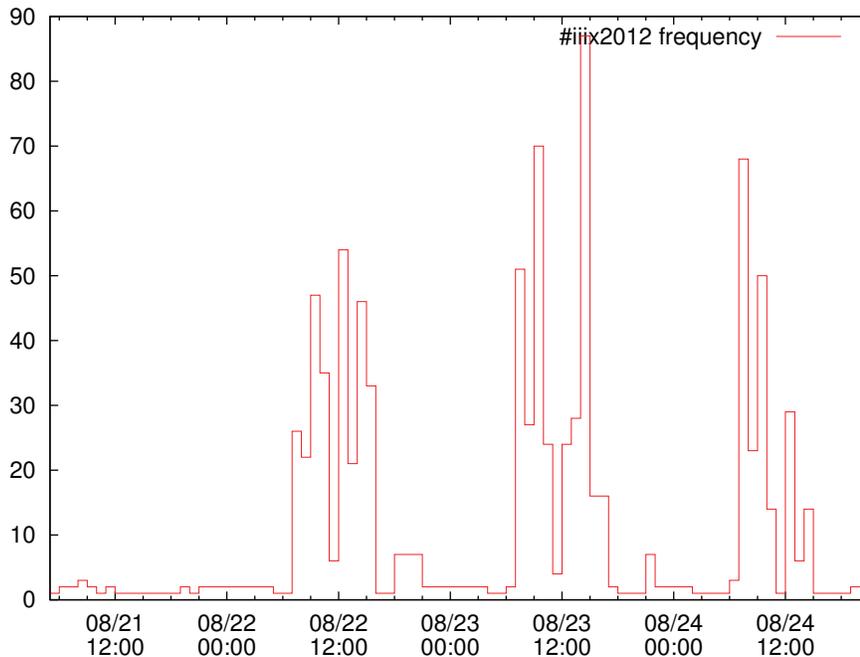Seven students were accepted for participation in the Doctoral Consortium: Abu Shamim

Figure 2: Twitter activity in hourly tweets with `#iiix2012` during August 21–24.

Mohammad Arif (University of South Australia), Daniel T. J. Backhausen (Distance University in Hagen), Viktors Garkavijs (National Institute of Informatics, Japan), Saskia Koldijk (Radboud University), Anna Mikkonen (University of Tampere), Maya Sappelli (Radboud University), and Wan-Ching Wu (University of North Carolina at Chapel Hill). The group of mentors consisted of: Noriko Kando (National Institute of Informatics, Japan), Christina Lioma (University of Copenhagen), Robert Villa (University of Sheffield), Max Wilson (University of Nottingham), Hideo Joho (University of Tsukuba, co-chair), and Birger Larsen (Royal School of Library and Information Science, co-chair).

The doctoral students presented summaries of their work to other participating doctoral students and the senior researchers. Each presentation was followed by a plenary discussion, and individual discussion with one senior advising researcher. The discussions in the group and with the advisers helped the doctoral student to reflect on and carry on with their thesis work. Thanks to Google supporting the doctoral consortium, all students received a free IIiX registration (including Doctoral Consortium and EuroHCIR) and were invited for a special Doctoral Consortium dinner at the Brewery *De Hemel* (The Heaven).

3.2   EuroHCIR'12 Workshop

The 2nd European Workshop on Human-Computer Interaction and Information Retrieval (EuroHCIR'12) was held directly following IIiX'12, starting with a joint IIiX'12 closing reception/EuroHCIR'12 opening reception. EuroHCIR'12 was organized by Tony Russell-Rose, Max L. Wilson, James Kalbach and Birger Larsen.

HCIR, or Human-Computer Information Retrieval, was a phrase coined by Gary Marchionini in 2005 and is representative of the growing interest in uniting both those who are interested in how information systems are built (the Information Retrieval community) and

those who are interested in how humans search for information (the Human-Computer Interaction and Information Seeking communities). Five increasingly popular workshops and an NSF funded event , have brought focus to this multi-disciplinary issue in the USA , and the aim of EuroHCIR 2012 is to focus the European community in the same way.

The EuroHCIR workshop accepted 22 papers, with 9 of them presented in the plenary session, coming both from Industry and Academia. There was a keynote of Dominic Winsor (a consultation on user experience design and information architecture). EuroHCIR was sponsored by the MUMIA COST action network, and the SIKS. For more information we refer to `http://fitlab.eu/euroHCIR2012/`. The EuroHCIR'12 proceedings are available online at `http://ceur-ws.org/Vol-909/`.

3.3   Erasmus Summer School on Information Foraging

In the two weeks following IIiX/EuroHCIR, Radboud University organized the second summer school about "Information Foraging," funded by an Intensive Program (IP) grant from the EU Lifelong Learning Program Erasmus. Participating universities in this IP are University of Glasgow, University of Tampere, Université Paul Sabatier, KU Leuven, Universität Duisburg-Essen, University of Amsterdam, Royal School of Library and Information Science (DK), University of Hildesheim, University of Sheffield, University of Milano Bicocca, and the University of Strathclyde.

The goal of the course was to introduce students to theoretical models and technology related to all facets of (professional) interaction with information in an information seeking context. The topic Information Foraging' reflects the shift of attention in information retrieval research from static document statistics towards i) on-line systems that are designed for user interaction and ii) exploiting the collective information access behavior of communities of users.

A total of 35 students followed the summer school (several of them after attending IIiX, making it a three week event). There were in total 12 lecturers: Leif Azzopardi (Glasgow), Pia Borlund (RLIS), Mohand Boughanem (Toulouse), Norbert Fuhr (Duisburg-Essen), Jaap Kamps (Amsterdam), Wessel Kraaij (Radboud), Sascha Kriewel (Duisburg-Essen), Sien Moens (Leuven), Gabriella Pasi (Milano), Ian Ruthven (Strathclyde), Elaine Toms (Sheffield), and Theo van der Weide (Radboud). A special keynote lecture was given by Keith van Rijsbergen (University of Glasgow). For more information we refer to `http://www.ru.nl/is/ifl/education/eu-intensive/call-participation/`

4   Conclusions

The fourth Information Interaction in Context Symposium brought together researchers interested in all aspects of information interaction. It stimulated discussion and exchange of ideas between researchers in different areas, ranging from information seeking and task-based IR, to user interface design and retrieval systems technology. Three elements were key in stimulating this discussion. First, IIiX'12 followed the tradition to have a single track model where presentations of different areas are interleaved. This avoids the problem of researchers tending to select sessions that are closest to their own area of research. Second, IIiX'12 followed the tradition to have substantial space for informal interaction between attendees. In particular, IIiX'12 had a large number of social events that avoided the attendees to break

up in smaller groups. Third, IIiX'12 had three great keynote that thought provokingly raised issues to be tackled in years to come. Peter Ingwersen raised a forgotten issue in transferring back the insights from Web links and anchor text to the scientific references and citations that partly inspired the methods proven effective on the Web. Diane Kelly raised numerous issues with the current state of the field, and gave the initial seeds of reinventing the next generation of search support systems. Dan Russell gave deep insights in the amazing power of modern search, and also the ease of failure when elementary search literacy competencies are missing. In particular the combination of Diane's and Dan's keynote gave deep insights in the future directions of information access.

During the conference, we received only complaints about two issues. First, some attendees complained about the weather. Organizing a conference in the Netherlands means always a small risk. Even though the August weather is usually fine, there is always a chance of rain, and the organizers anticipated this by including a complementary umbrella in the conference bag. In 2012, however, we faced an unexpected problem: in the weekend preceding the conference the temperature reached a record high of 36 degrees centigrade (98 fahrenheit). Fortunately, the temperature dropped to pleasant summer weather when the conference finally started. Second, some attendees complained about wearing them out with the continuous social events. On Tuesday, there was the IIiX'12 opening reception followed by the doctoral consortium diner at the Brewery *De Hemel* (The Heaven, eight courses). Wednesday there was the poster reception, followed by the IIiX past-chairs diner and an IIiX organizers diner at restaurant *Het Heimwee* (The Homesick, four courses). Thursday, there was the Banquet at the Belvedere (five courses and magnificent views). Friday, there was the combined IIiX'12 closing reception and EuroHCIR opening reception. Etc. Overall, the evaluation of IIiX'12 was overwhelmingly positive.

At the IIiX business meeting, it was announced that the next IIiX will take place in the last week of August, 2014, in Regensburg, Germany—organized by David Elsweiler, helped by a larger team of IIiX veterans (Leif Azzopardi, Max Wilson). We look forward to continuing the discussion in Regensburg—you really don't want to miss this conference!

Acknowledgments

References

[1] C. Eickhoff, L. Azzopardi, D. Hiemstra, F. de Jong, A. de Vries, D. Dowie, S. Duarte, R. Glassey, K. Gyllstrom, F. Kruisinga, K. Marshall, S. Moens, T. Polajnar, and F. van der Sluis. Emse: initial evaluation of a child-friendly medical search system. In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX '12, pages 282–285, New York, NY, USA, 2012. ACM.

[2] J. Fransson. Intention and task context connected with session in a cultural heritage collection. In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX '12, pages 138–144, New York, NY, USA, 2012. ACM.

[3] P. Ingwersen. Citations and references as keys to relevance ranking in interactive ir. In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX '12, pages 1–1, New York, NY, USA, 2012. ACM.

[4] P. Ingwersen, I. Ruthven, and N. Belkin. First international symposium on information interaction in context. *SIGIR Forum*, 41(1):117–119, June 2007.

[5] J. Kamps, W. Kraaij, and N. Fuhr, editors. *IIIX'12: Proceedings of the 4th Information Interaction in Context Symposium*, New York, NY, USA, 2012. ACM.

[6] D. Kelly. Cognitive consequences of search. In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX'12, pages 2–2, New York, NY, USA, 2012. ACM.

[7] D. Kelly and N. J. Belkin. The third information interaction in context symposium (iiix'10). *SIGIR Forum*, 44(2):13–14, Jan. 2011.

[8] M. Lalmas, A. Tombros, P. Borlund, and J. W. Schneider. Second international symposium on information interaction in context. *SIGIR Forum*, 43(1):59–62, June 2009.

[9] D. Russell. What does it mean to be literate in the age of google? In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX '12, pages 3–3, New York, NY, USA, 2012. ACM.

[10] M. Saastamoinen, S. Kumpulainen, and K. Järvelin. Task complexity and information searching in administrative tasks revisited. In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX '12, pages 204–213, New York, NY, USA, 2012. ACM.

[11] A. Said, B. J. Jain, A. Lommatzsch, and S. Albayrak. Correlating perception-oriented aspects in user-centric recommender system evaluation. In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX '12, pages 294–297, New York, NY, USA, 2012. ACM.

[12] P. Tirilly, X. Mu, C. Huang, I. Xie, W. Jeong, and J. Zhang. On the consistency and features of image similarity. In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX '12, pages 164–173, New York, NY, USA, 2012. ACM.

[13] W.-C. Wu, D. Kelly, A. Edwards, and J. Arguello. Grannies, tanning beds, tattoos and nascar: evaluation of search tasks with varying levels of cognitive complexity. In *Proceedings of the 4th Information Interaction in Context Symposium*, IIIX '12, pages 254–257, New York, NY, USA, 2012. ACM.