

Third International Workshop on Conversational Approaches to Information Retrieval (CAIR'20)

Full-day Workshop at CHIIR 2020

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ABSTRACT

The third CAIR workshop brings together researchers and developers interested in advancing conversational systems in interactive information retrieval. The workshop builds on the first and second CAIR workshops held at SIGIR 2017 and 2018 and will focus on the continuing development of current challenges, user and system limitations, and evaluation of conversational systems for information retrieval.

Participants will collaboratively explore different contexts (i.e., home, hospitals, or work settings), use cases, and interactivity forms (voice-only, multi-modal, screen-based) in which conversational search systems can be used. Possible outcomes include fostering novel and innovative methodologies (such as for data collection and evaluation), personalising conversational systems, and understanding ethical challenges—such as system transparency—from the user’s perspective.

CCS CONCEPTS

• **Information systems** → **Information retrieval**;

KEYWORDS

Conversational Search, Interactive Information Retrieval, Discourse and Dialogue

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1 DESCRIPTION

Conversational web search, to present and interact with search engine results or information units, is becoming ubiquitous. This is mainly through the use of mobile devices and intelligent assistants such as Apple’s HomePod, Google Home, or Amazon Alexa. Currently, these intelligent assistants do not maintain a lengthy information exchange. They have difficulty tracking the users’ context and consequently have issues presenting information suitable for the users’ environment; do not interact with the user in a multi-turn conversation; or grapple with creating rich models of the users’ changing information needs [9]. Understanding how users would interact with the conversational system in multi-turn information-seeking dialogues, and what users expect from these new systems, is largely unexplored in search settings [12, 15].

Conversational search has been identified as an important new research direction at several meetings, including the last two Strategic Workshops on IR [1, 3], and has recently gained much interest. For example, there is a growing interest in voice-only search systems that go beyond “command and control” utterances from users and keep track of what has been said, in session and over multiple sessions, and thus, go further than one-turn exchanges. At previous CAIR workshops¹ attendees concluded that there is a lack of understanding of search tasks, search result description, and evaluation of Spoken Conversational Search [10]. More importantly, the IR community lacks a broader insight into how users will engage with these highly interactive search systems and which components may be involved.

The 1st and 2nd International Workshops on Conversational Approaches to Information Retrieval (CAIR'17 and CAIR'18) were held at SIGIR 2017 and SIGIR 2018, respectively [5, 10]. Continued interest within the IR, HCI, dialogue, and speech recognition/generation communities led to CAIR'20. The CHIIR conference attracts researchers from across disciplines and is a natural venue for the workshop.

¹<https://sites.google.com/view/cair-ws/>

2 SIGNIFICANCE AND RELEVANCE

The workshop will bring together academic and industry researchers and developers to advance conversational approaches to search applications with a focus on interactivity. We are open to a variety of modalities of conversation, including speech-based interaction (i.e., Spoken Conversational Search [13, 14]), text-based interaction (i.e., search-bots [2]), or multi-modal interaction (e.g., audio-in, text-out or multiple simultaneous modalities [7]). We also welcome studies investigating human-human interaction (e.g., collaborative search), which can inform the design of conversational search applications.

2.1 Topics of interest

The workshop welcomes a broad range of studies that can contribute to the development of conversational approaches to IR and IIR. Topics of interest include (but are not limited to):

Query understanding and search process management.

- Processing verbose natural language queries
- Processing noisy ASR queries
- Relevance feedback in conversational search
- Voice-based search engine operations
- Dialogue schema for conversational search

Search result description (presentation) and organisation.

- Audio-based search result presentation and summarization
- Conversational navigation of search results
- Knowledge graph presentation in conversational search
- Conversational navigation of search results
- Advertisements in audio-based search result presentation

System participation, modality, and personality.

- Pro-active search and recommendation interactions
- Mixed-initiative
- Search need elicitation
- Personality traits of conversational systems
- Interaction behaviours in conversational search

Evaluation, training, and assessment.

- Building test collections for conversational search
- Development of new metrics to measure effectiveness, engagement, satisfaction of conversational search
- Conversational search tasks

Usage, applications, and context.

- Intelligent personal assistance
- Intelligent home assistance using voice/speech oriented devices
- Collaborative search
- Hands-free search (e.g., in car, kitchen)
- Search for medical purposes
- Search for visually impaired users
- Search for low literacy users
- Integration with existing technologies

Development.

- Conversational systems as a standalone application
- Usage of existing applications (such as APIs) enabling further research

3 PROGRAMME

At CAIR'20 we plan to discuss innovative perspectives on conversational search, within the context of human-machine interactions. The workshop will allow for discussion and sharing research experiences through working groups. The workshop content and discussion are informed by the participants' papers and interests to foster collaboration and group problem-solving. To attract participants to the workshop, we also plan to have a keynote presentation from a leading industrial organisation that works on conversational products.

A schedule follows. We accepted a limited number of papers. However, our intention is to spend more time on the discussion of issues and ideas related to conversational search, as well as presenting the latest work in this domain.

Time	Event
09.00-09.15	Opening
09.15-10.15	Keynote
10.15-10.45	Morning tea break
10.45-12.45	Paper session (4 talks)
12.45-13.00	Consolidation and group forming of discussed and identified themes of interest by participants or pre-identified topics
13.00-14.00	Lunch break with poster presentation
14.00-14.45	Group work, focusing on identified topics
14.45-15.15	Presentation of group work
15.15-15.30	Afternoon tea break
15.30-16.45	Plenary and group report
16.45-17.00	Future plans and closing

3.1 Accepted Papers

Four papers were accepted at the workshop. They ranged from conversation response ranking [8], how conversational systems could be used to help farmers [6], para-linguistic features for conversational IR [11], and a lab-based experiment to elicit information [4].

4 RELATED WORKSHOPS

Several workshops related to conversational IR were held in the past few years. The Search-Oriented Conversational AI (SCAI) Workshop has been held in conjunction with 3rd ACM International Conference on the Theory of Information Retrieval (ICTIR'17) in October 2017, the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP'18) in late 2018, The Web Conference 2019 (TheWebConf 2019), and the 28th International Joint Conference on Artificial Intelligence (IJCAI'19).² The SCAI workshop has an emphasis on artificial intelligence (AI) technologies on this subject. While AI technologies are important, CAIR'20 welcomes a broader range of approaches to conversational search, especially on human-machine interaction.

The Conversational Agents in Collaborative Action Workshop³ was held in conjunction with the 20th ACM conference on Computer-Supported Cooperative Work and Social Computing (CSCW'17) in

²<http://scai.info/>

³<https://talkingwithagents.wordpress.com/>

February 2017. Recently the Conversational Agents: Acting on the Wave of Research and Development⁴ was held in conjunction with the ACM Conference on Human Factors in Computing Systems (CHI'19) in May 2019. The First user2agent Workshop on User-Aware Conversational Agents (ICUI'19)⁵ was held at the 24th Annual Meeting of the Intelligent User Interfaces Community (IUI'19) in March 2019. More recently, the 1st International Conference on Conversational User Interfaces (CUI'19)⁶ was held in August 2019. These workshops and new conference indicate a keen interest in conversational interfaces for different or general applications (i.e., non-search applications). CAIR'20 will focus on search application and behaviours.

CAIR'20 is distinguished by an emphasis on search applications, and on searcher behaviour and human-computer interaction.

5 ORGANISERS

Johanne Trippas (RMIT University) is a research fellow at RMIT University. Her research interests include results presentation and interactivity for Spoken Conversational Search. Recently, Dr. Trippas has been working on next-generation capabilities for intelligent systems. She has been a SIGIR Student Liaison and has co-organised the workshop on Spoken Dialogue Systems for PhDs, PostDocs & New Researchers, co-located at SIGDIAL 2018.

Paul Thomas (Microsoft) is a senior applied researcher at Microsoft. His research interests include how people use search and conversational systems, and how we should evaluate these systems. Recently, Dr. Thomas has been working on modelling conversational style in information-seeking scenarios. He is co-chair of CHIIR'21.

Damiano Spina (RMIT University) is a lecturer at RMIT University. His recent research interests include interactive information retrieval and evaluation. Dr. Spina is an editorial board member of IP&M. Damiano was a co-organiser of CAIR'18, co-organiser of the SIGDIAL 2018 special session on conversational search, and a steering committee member of CAIR'17.

Hideo Joho (University of Tsukuba) is an Associate Professor at the University of Tsukuba. His recent research interests include collaborative search, lifelog search, and test collections. Dr. Joho was a PC co-chair of CHIIR 2019. Hideo is a liaison officer of SIGIR and SIGdial, co-organiser of CAIR'17 and CAIR'18.

5.1 Steering Committee

The steering committee includes the following members.

- Jaime Arguello (University of North Carolina at Chapel Hill)
- Lawrence Cavedon (RMIT University)
- Fernando Diaz (Microsoft)
- Dilek Hakkani-Tür (Amazon)
- Julia Kiseleva (Microsoft & University of Amsterdam)
- Filip Radlinski (Google)
- Mark Sanderson (RMIT University)

5.2 Programme

The CAIR'20 Programme Committee is formed by:

- Mohammad Aliannejadi (University of Amsterdam)
- Sandeep Avula (University of North Carolina at Chapel Hill)
- Leif Azzopardi (University of Strathclyde)
- Nicholas J. Belkin (Rutgers University)
- Aleksandr Chuklin (Google Research)
- Jiepu Jiang (Virginia Tech)
- Gareth Jones (Dublin City University)
- Evangelos Kanoulas (University of Amsterdam)
- Johannes Kiesel (Bauhaus-Universität Weimar)
- Karthik Raghunathan (MindMeld)
- Alexandra Vtyurina (University of Waterloo)
- Liu Yang (Google)
- Imed Zitouni (Google)

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⁴<https://convagents.org/>

⁵<https://www.research.ibm.com/haifa/Workshops/user2agent2019/>

⁶<http://cui2019.com/>