

AI and Cognitive Assistants in Collaboration

Philipp Ebel
University of St. Gallen
Philipp.ebel@unisg.ch

Eva Bittner
University of Hamburg
Bittner@informatik.uni-hamburg.de

Sarah Oeste-Reiß
University of Kassel
oeste-reiss@uni-kassel.de

Matthias Söllner
University of Kassel
soellner@uni-kassel.de &
University of St. Gallen
Matthias.soellner@unisg.ch

1. Introduction

In the field of computer science, as well as in the information systems domain, artificial intelligence (AI) constitutes one of the most rapidly growing streams of research. This is mainly due to the fact that technological innovations enable the development of productive AI solutions that provide compelling benefits in various fields of application. Consequently, for example in industry 4.0 or service contexts, machines augment and assist human work or start to take over more and more tasks previously executed by humans.

However, despite the recent advances, we are still far away from a strong or general AI comparable to a human intelligence, especially when it comes to intelligence across certain domains or tasks. Therefore, the importance of the engagement of humans into the decision process of AI systems is widely acknowledged in research and practice. This collaboration between humans and AI systems can take many different forms, and their effectiveness depends on the boundary conditions of a specific collaborative setting as well as various design choices concerning the systems and work practices.

Although a considerable amount of exploration has been conducted regarding such human-AI collaboration, the breadth and scope for dialogue and experimentation needs to be broadened. This minitrack intends to provide a place for such dialogue and support of a diverse community interested in taking the challenge further. The four papers that have been selected provide an excellent starting point for research

concerning the collaboration between humans and AI systems.

The first paper “*Cluster Analysis of Musical Attributes for Top Trending Songs*” presents a cluster analysis of 100 trending songs on Spotify to identify attributes that make certain songs trendy on music streaming services. It uses the k-means algorithm to identify top combinations of ten song attributes, derived via the Spotify API. The results show that music structures with high danceability and low instrumentalness increase the popularity of a song and lead them to chart-topping success.

The second paper “*Factors Influencing Approval of Wikipedia Bots*” deals with the intriguing topic of the influencing factors for the approval of Wikipedia Bots based on a modified Technology Acceptance Model (TAM). Therefore, the authors examine factors related to approval of a bot by analyzing 100 bots’ project pages. The results suggest that usefulness, value-based decision making and the bot’s status (e.g., automatic or manual) are related to approval. In that, the study contributes to understanding decision making regarding the human-automation boundary and may lead to developing more efficient bots.

The third paper “*Studying with the Help of Digital Tutors: Design Aspects of Conversational Agents that Influence the Learning Process*” proposes a morphological box for the design of pedagogical conversational agents, such as Amazon’s Alexa or Google’s Assistant, as such conversational agents are becoming more and more prevalent. Almost every smart device comes equipped with such an agent. While on the one hand they can make menial everyday

tasks a lot easier for people, there are also more sophisticated use cases in which conversational agents can be helpful. One of these use cases is tutoring in higher education. Several systems to support both formal and informal learning have been developed. There have been many studies about single characteristics of pedagogical conversational agents and how these influence learning outcomes. But what is still missing, is an overview and guideline for atomic design decisions that need to be taken into account when creating such a system. Based on a review of articles on pedagogical conversational agents, the paper provides an extension of existing classifications of characteristics as to include more fine-grained design aspects.

The fourth paper *“My Virtual Colleague: A State-of-the-Art Analysis of Conversational Agents for the*

Workplace“ within this mini-track aims This article presents findings from a literature review in selected information systems outlets on the current state of research on conversational agents for the workplace. As a result of this analysis, the authors identified 29 workplace CAs designed for workers that contribute to eight different application domains. Based on these finding, the authors then moved forward and compiled a list of aspects to be considered when designing such CAs and identified starting points for further research.

In sum, the four paper that have been selected for presentation within this mini-track, show the plethora of research avenues that the collaboration between humans and machines holds. We look forward to the presentations of these papers and the discussion around at HICSS 53.