Artificial Intelligence-based Assistants (AIA)

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1. Introduction

Artificial Intelligence (AI) has received much attention due to the recent progress in several technological areas such as image detection, translation, and decision support [1]. Established businesses and many start-up businesses are eagerly discussing how they can gain a competitive advantage from complementing their products, services and processes with AI. In fact, based on the research in the AI domain since several decades, a broad variety of promising application fields were suggested where AI might add business value. Meanwhile, applications are not limited to simple structured problems, but even applications higher complexities are feasible, which require higher levels of "intelligence". To avoid discussions on the ambivalent notion of "intelligence", it shall refer to tasks involving perception, processing, action and learning [2]. Many applications are possible along these activities, in particular a user's interaction via natural language.

AI-based assistants employ technologies such as natural language processing, predictive analytics, machine learning, as well as voice recognition and generation. They unlock business value through automating processes, intensifying customer interaction, reducing errors, and speeding up interactions to name a few [3]. In general, two main impacts may be observed [4]. First, virtual personal assistants and chatbots, such as Amazon Alexa and Google Home, enable the interaction of human beings with machines by voice, replacing standard human-computer interaction via mouse, keyboard, and screen of an application. Second, AI-based assistants replace human beings interfacing two application systems. These kinds of AI-based assistants are also subsumed under the term Robotic Process Automation (RPA) [5], handling interactions previously performed by humans to pair two application systems.

The success of AI-based assistants may be described with the various offerings from the big tech providers (e.g. Alexa, Cortana, Siri) as well as numerous chatbots that created with the open-source development kits. For example, the Alexa universe already comprises 47'000 applications, which are referred to as "skills" [6]. This is also linked to a growth of application fields and interaction modes, which explains why assistant platforms are also recognized as general-purpose technologies [7]. Following the understanding that information systems are socio-technical in nature, AI-based assistants should be framed as a step toward humanizing technology and work environments in the digital economy. This opens the stage for many research questions that shall be addressed in the mini track.

2. Goal of Mini Track

The mini track "Artificial Intelligence-based Assistants" was initiated in 2021 for the first time to promote the scientific exchange on AI-based assistants. It should enable researchers to present and discuss innovative approaches, methodologies, models, processes, etc. to design, implement, deploy, operate and optimize such assistants for the digital economy. The AI-based assistants mini track sought submissions to the following (non-exhaustive) topics:

- Applications of AI-based assistants in the digital economy
- Methods and models to design, develop, implement, deploy, manage and monitor AI-based assistants.
- Methods, tools, and approaches to capture user behavior using techniques such as process mining to derive recommendations for actions.
- New business models and processes based on AI-based assistants.

3. Accepted Papers

Fourteen papers were submitted to the mini track with seven of them being accepted after a rigorous review process with two phases.

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Marco Gärtler and Benedikt Schmidt investigate the practical challenges of building a virtual assistant in their paper "Practical Challenges of Virtual Assistants and Voice Interfaces in Industrial Applications". They use a representative and simplified case from of knowledge retrieval domain to identify two significant obstacles: First, user acceptance is lower than for comparable GUI-based systems and, second, a disproportional amount of effort to get all details and having a robust system.

In their paper "A Conceptual Model for Assistant Platforms", Rainer Schmidt, Rainer Alt, and Alfred Zimmermann develop the notion of assistant platforms and elaborate a conceptual model that supports businesses in developing appropriate strategies. The model consists of three building blocks, an architecture that depicts the components as well as the possible layers of an assistant platform, the mechanism that determines the value creation on assistant platforms, and the ecosystem with its network effects, which emerge from the multi-sided nature of assistant platforms. Its main purpose is to advance the understanding of assistant platforms and to trigger future research.

Due to the recent proliferation of the concept of anthropomorphism, human likeness in technology, has increasingly attracted researchers' attention. To create a comprehensive understanding, Mengjun Li and Ayoung Suh reviewed empirical studies, in their paper "Machinelike or Humanlike? A Literature Review of Anthropomorphism in AI-Enabled Technology". Based on their analysis, they discuss potential research gaps and offer directions for future research

Using voice assistants for shopping incorporates elements of risk affecting when and how they are considered trusted relationship partners. Therefore, Alex Mari and René Algesheimer investigate in their paper "The Role of Trusting Beliefs in Voice Assistants during Voice Shopping the effect of trusting beliefs towards voice assistants on decision satisfaction through the indirect effect of consideration set size in the context of voice shopping. Their findings show a positive direct effect of trust on customer's satisfaction and a mediating role of set size, confirming consumers bias towards default choices.

Neda Mesbah, Christoph Tauchert, Peter Buxmann examine in their paper "Whose Advice Counts More – Man or Machine? An Experimental Investigation of AI-based Advice Utilization" differences in the advice utilization depending on whether it is given by an AI-based or human advisor. Drawing on task-technology the authors investigated the relationship between task, advisor and advice utilization. The findings show that compared to human advisors, judges utilize advices of AI-based advisors more when the advice is similar to their own estimation.

In their paper "All About the Name: Assigning Demographically Appropriate Names to Data-Driven Entities", Soon-gyo Jung, Joni Salminen, and Bernard J. Jansen develop a method for assigning demographically appropriate names to data-driven entities. The value of this method is removing the time-consuming human effort

Communication with conversational agents (CA) has become increasingly important. Therefore Rangina Ahmad, Dominik Siemon and Susanne Robra-Bissantz examine, whether individuals rate communication satisfaction of a CA similar to their own personality as higher. The results of their experiment indicate that highly extraverted CAs are generally better received in terms of social presence and communication satisfaction. Further, the author found that incorporating personality into CAs increases perceived humanness.

4. Acknowledgements

5. References

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