



See you soon again, chatbot? A design taxonomy to characterize user-chatbot relationships with different time horizons

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ABSTRACT

Users interact with chatbots for various purposes and motivations – and for different periods of time. However, since chatbots are considered social actors and given that time is an essential component of social interactions, the question arises as to how chatbots need to be designed depending on whether they aim to help individuals achieve short-, medium- or long-term goals. Following a taxonomy development approach, we compile 22 empirically and conceptually grounded design dimensions contingent on chatbots' temporal profiles. Based upon the classification and analysis of 120 chatbots therein, we abstract three time-dependent chatbot design archetypes: Ad-hoc Supporters, Temporary Assistants, and Persistent Companions. While the taxonomy serves as a blueprint for chatbot researchers and designers developing and evaluating chatbots in general, our archetypes also offer practitioners and academics alike a shared understanding and naming convention to study and design chatbots with different temporal profiles.

1. Introduction

Chatbots are on the rise to simplify and humanize the access to digital services (Go & Sundar, 2019). Designed to engage individuals in human-like conversations (Araujo, 2018; Scarpellini & Lim, 2020) they accompany people in their everyday lives as “digital coaches” (Fleisch, Franz, & Herrmann, 2021) or “virtual assistants” (Youn & Jin, 2021) providing users with individual, “high-touch” support (Wunderlich, von Wangenheim, & Bitner, 2012) on their smartphones or other devices, anywhere and anytime (Skjuve & Brandtzæg, 2018).

Users' primary motivations to engage with conversational agents¹ are manifold, which is reflected in the variety of conversational agents available ranging from the popular general-purpose voice assistants SIRI (Apple, Inc.) or ALEXA (Amazon, Inc.) to domain-specific text-based

chatbots like the mental health chatbot WOEBOT or the scheduling assistants AMY and ANDREW (x.ai, Inc.). Another basic difference concerns whether users intend to interact with a chatbot only once – for instance, with an e-service chatbot helping users to find a specific product (Chung, Ko, Joung, & Kim, 2020) or for multiple, continuous interactions over longer periods of time, such as with a healthcare chatbot supporting patients to manage a chronic disease (Kowatsch et al., 2018). Thus, designing chatbots fundamentally hinges on their “temporal profile” which encompasses the prospective time horizon of using the chatbot as well as the duration and frequency of individual interactions throughout the entire user-chatbot relationship (Baraka, Alves-Oliveira, & Ribeiro, 2020).

Generally, in human-computer interaction research, temporal aspects have been recognized as a crucial design factor for the

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¹ In our research, we focus on text-based conversational agents, which are often also called “chatbots”. We will use “conversational agents” when we refer to all types of conversational agents on the reality-virtuality-continuum (De Keyser, Köcher, Alkire (née Nasr), Verbeeck, & Kandampully, 2019) and “chatbots” when we refer to “text-based CAs” only.

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