Chatbots for Social Good

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Abstract
Chatbots are emerging as an increasingly important area for the HCI community, as they provide a novel means for users to interact with service providers. Due to their conversational character, chatbots are potentially effective tools for engaging with customers, and are often developed with commercial interests at the core. However, chatbots also represent opportunities for positive social impact. Chatbots can make needed services more accessible, available, and affordable. They can strengthen users' autonomy, competence, and (possibly counter-intuitively) social relatedness.

In this special interest group (SIG) we address the possible social benefits of chatbots and conversational user interfaces. We will bring together the existing, but disparate, community of researchers and practitioners within the CHI community and broader fields who have an interest in chatbots. We aim to discuss the potential for chatbots to move beyond their assumed role as channels for commercial service providers, explore how they may be used for social good, and how the HCI community may contribute to realize this.

Author Keywords
Chatbots; conversational interfaces; social good

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Goals

- Put chatbots for social good on the agenda as a topic of research and practice in the CHI community.
- Share knowledge and experience on design, deployment, and uptake of chatbots and conversational user interfaces, and how these could be employed for social good.
- Share and discuss examples of service and data providers using chatbots for social good.
- Discuss risks of negative social impact of chatbots and conversational interfaces, and how to mitigate these.
- Identify opportunities for positive social impact of chatbots and conversational interfaces
- Suggest industry actions and research priorities to achieve identified opportunities for social good, or means to mitigate risks for negative social impact.

Introduction

Since early 2016, when tech giants such as Microsoft, Facebook, and Google endorsed chatbots and conversational user interfaces as an up and coming means of interacting with data and services, chatbot research and design has seen a surge in researcher and practitioner interest.

Conversational interfaces have a long history; early work in this field goes back to Weizenbaum's work on ELIZA in the 1960s [1]. However, the recent uptake of online messaging platforms, such as Facebook Messenger and WhatsApp, as well as conversational user interfaces such as Amazon's Alexa, Google Home, and Apple's Siri, make the promise of meaningful, engaging and ubiquitous natural language dialogue with users tempting to service providers. Furthermore, advances within artificial intelligence and machine learning bring hope that existing technological hurdles to natural language user interfaces may soon be overcome [2].

The recent developments in chatbots and conversational interfaces is due to a massive technology push. Service providers see chatbots as a potential new route to customer engagement [3], which is important as the growth in the mobile app market is stalling and customers increasingly spend their online time on messaging platforms. Chatbots are also seen as a means of increasing efficiency in customer service, providing an automated supplement to human helpdesk personnel [4]. This technology push may have come at the cost of developing chatbots that actually respond to user needs and desires [5]. Hence, the user uptake of chatbots arguably is lower than what might be expected, given the huge interest among providers.

Chatbots and Social Good

While chatbot development until now has been highly technology driven, we believe that chatbots hold potential to become a technology for *social good*. That is, chatbots may be developed for the purpose of having a beneficial impact on society.

Chatbots can be made immediately available to billions of users of messaging platforms, which suggests a democratizing potential. Furthermore, the simple natural language dialogue in chatbots suggest that this may be a low threshold avenue to data and services for the general public. The conversational character of chatbots also make chatbots possible bridges of digital divides, due to their low threshold for uptake across user groups.

Some of the chatbots already on the market exemplify applications that may have beneficial social impact. In the health domain there are chatbots supporting low cost, easy access medical triage (e.g. Babylon), mental health support (e.g. Woebot), and health-promoting behavior change (e.g. Florence). In the domain of civic participation, chatbots can, for example, be used to strengthen voting behavior (e.g. Hello Vote). Chatbots are also used to support education and training (e.g. Differ).

The potential in chatbots for social good should be of interest to tech companies, who have been criticized for not fully recognizing the social responsibility that arguably follows with technology development [6]. In particular, as some of the major companies have previously engaged in initiatives that clearly have beneficial social implications; such as, for example, providing internet access to rural and remote areas

Audience

The audience for this SIG is researchers and practitioners with an interest in chatbots and conversational interfaces. This audience is highly cross-disciplinary, and may include participants from fields such as artificial intelligence and software engineering, linguistics and natural language processing, psychology and sociology, marketing and business administration. The discussions of the SIG will be kept at a level that enables cross-disciplinary exchange.

Organizers

The organizers of this SIG represent the cross-disciplinary character of the chatbot field, spanning informatics, design, the social sciences and humanities.

Three of the organizers have previously been involved in CONVERSATIONS 2017, an international workshop on chatbot research and design, where we identified the need for a SIG on chatbots for social good.

(e.g. Google's Project Loon and Microsoft's Rural Airband Initiative), access to knowledge resources (e.g. Google Scholar), and the recent efforts (e.g. by Facebook) to combat fake news.

To sustain a trend towards tech for social good, tech companies should consider not only the profitability of technological advances but also their potential for beneficial social impact. However, the potential for social good in chatbots has currently not been accentuated by major tech companies – neither in words nor in concrete applications. Rather, the prevailing chatbot use cases concern customer support, media and content distribution, and marketing.

Areas Addressed in the SIG

During this SIG we will address how chatbots can be used for social good. We will specifically consider areas where we believe that chatbots hold a particular opportunity for beneficial social change. As current chatbots mainly are developed for the consumer market, these areas are set out in accordance with Deci and Ryan's [7] framework for understanding psychological well-being, addressing *autonomy*, *competence*, and *relatedness* [8]. Discussing chatbots for societal improvements in these areas arguably is a good starting point on the path towards chatbots for social good.

Interestingly, all the predefined areas also entail potential challenges that chatbots pose to society. That is, areas where chatbot development, if conducted without the guidance of an ethical compass, may go astray. Hence, for each area, we also open for discussions on potential challenges.

(1) Chatbots for autonomy. Autonomy concerns people's need for self-determination. Chatbots represent a substantial opportunity to strengthen peoples' autonomy, through reduced digital divides and access to empowering services. The potential reduction in digital divides concerns the lowered threshold to participation through the conversational, easily accessible, nature of chatbots and the broad uptake of messaging platforms. The empowering potential of chatbots may be seen in chatbot services for citizen engagement, health and welfare. *Potential challenges:* Chatbots are still an emerging field. Hence, it may be difficult for consumers and citizens to distinguish chatbots in terms of the quality and veracity of their offerings. For example, what is seen as paths to increased autonomy may be cloaked marketing initiatives, or even hoaxes.

(2) Chatbots for competence. Competence concerns the knowledge and skills needed to act in one's own or others best interest. With an easily accessible and low threshold conversational user interface, the potential for chatbots to support education and training is arguably significant. For example, to support training in subjects that require a small effort on a routine basis – such as the learning of languages. *Potential challenges:* Chatbots to support education, as other EdTech solutions, will depend on being part of a larger educational system. To have the desired effect on competence, chatbots will likely need to be included as part of educational and training programs rather than being offered as stand-alone alternatives.

(3) Chatbots for social relatedness. Relatedness concerns closeness and connectedness to significant others. Social isolation and disconnectedness is an

Agenda

This SIG is seen as instrumental to discuss how chatbots may be utilized for social good. To achieve this, we have planned the following agenda:

- Introduction (10 minutes): Brief presentation of SIG background and objectives.
- Topic 1 (15 minutes): Chatbots for autonomy.
- Topic 2 (15 minutes): Chatbots for competence.
- Topic 3 (15 minutes): Chatbots for social relatedness.
- Research priorities (20 minutes): Collaborative process to identify research priorities
- Way forward (5 minutes). Suggestions for how to continue the discussions and next steps.

For each of the three topics, there will be a brief intro to set the scene prior to wider discussions.

important challenge in today's society [9]. Some chatbot applications suggest how chatbots may help bring people together. For example, in the educational platform Differ, chatbots bring students that do not know each other together in discussion groups. Other chatbots help strangers meet, for dialogue or relationships. *Potential challenges:* Chatbots in larger networks may disrupt networked interaction or lead to misunderstandings concerning the nature of a community. On Twitter, automated accounts are responsible for a substantial share of the communication, and may at times be difficult to distinguish from human accounts, possibly skewing trending topics [10].

Outcomes and Next Steps

To build on the discussions and insights acquired during the SIG, we will consider the following next steps:

- Establish a network of researchers and practitioners on chatbots for social good. The network may be hosted on an available social media platform, e.g. as a Facebook group
- Include identified challenges as key topics in future workshops and events on chatbot research and design.
- Collaborate on a journal special issue on chatbots for social good.

Given the pace of development in this area, we will also consider a SIG on chatbots for social good at CHI 2019.

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