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Feeling Socially Excluded When Working With Robots

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Abstract

Work is not just about money, but also about satisfying social needs. We examine processes of social inclusion and exclusion among human employees and robot employees. For our current study, we chose the restaurant industry as a contemporary use case where humans and robots work together as waiters. We assume that social exclusion from either human or robot colleagues will threaten peoples needs (i.e., belonging, control, meaningful existence, self-esteem) but will be interpreted differently depending on the excluding agent (i.e., human colleague or robot colleague). Assuming different attribution processes challenges the "Computers Are Social Actors" theory and could lead the rethinking human-robot interactions or even humans interacting with technology in general.

Keywords: social exclusion, robot coworker, work in progress

1. Introduction

Work goes beyond being a source of income; it also acts as a framework for time management, a platform for building social connections, a catalyst for pursuing collective objectives, a symbol of societal status, and a source of activity [1, 2]. Humans inherently seek social interaction [3]. Interactions with coworkers can either fulfill or compromise basic social needs [4].

As robots become more integrated into the workforce [5], this innate aspect of human behavior could face disruption, possibly leading to feelings of social exclusion. Social exclusion threatens fundamental human needs (i.e., a sense of belonging, meaningful existence, control, and self-esteem) and can lead to severe consequences (i.e., depression, alienation, helplessness) in the long run [6].

2. SAIL

The effects of human-robot team work are explored as one aspect of SAIL [7]. SAIL is an interdisciplinary research network in Germany, in which Bielefeld University, Paderborn University, University of Applied Sciences Bielefeld and the University of Applied Sciences Ostwestfalen-Lippe are involved [8]. The abbreviation SAIL stands for "SustAInable Life-cycle of Intelligent Socio-Technical Systems" and illustrates the goal of developing the entire product life cycle of AI systems in a sustainable manner [8, 9]. The design of AI systems should ensure transparency, security and human self-determination [9].

3. Work in Progress

Within SAIL, we investigate processes of social inclusion and exclusion in human-robot interactions within work settings [7]. For our current study, we chose the restaurant industry as a contemporary use case since plenty of skilled workers have left the hospitality industry because of poor work-life balance, low job security, and little employee compensation [10]. As a consequence, many restaurants turned to employing robots as waitstaff to address the scarcity of skilled labor. However, these robots lack crucial communication skills, potentially causing human employees to experience feelings of exclusion.

To explore this, we planned a pre-registered [11] online study where people should imagine working in a restaurant with either human colleagues (see Figure 1) or robot colleagues (see Figure 2). During the study, participants read texts describing different behaviors of their colleagues in a randomized order. The behaviors depict various forms of social inclusion and exclusion. After each behavior, participants are asked to generate potential explanations for the previous behavior and indicate their need fulfillment through questionnaire items excerpted from [12].

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Building on the temporal need-threat model [6], we anticipate that social exclusion poses a threat to essential human needs (e.g., belonging, self-esteem, meaningful existence) regardless of whether social exclusion originates from a human or a robot. Nevertheless, we speculate that individuals interpret their experienced exclusion differently depending on the excluding agent (human vs. robot). This assumption challenges the "Computers Are Social Actors" theory [13], which suggests that individuals unconsciously apply social norms to computers based on interpersonal interactions. Such insights would represent a significant advancement in the field of human-robot interaction research.

Figure 1: Restaurant Picture With Human Waiters

4. Outlook

Our next steps will be analyzing the data collected in this study and preparing a manuscript for publication. We comply with Open Science standards. Therefore, we pre-registered [11] our study and plan making the data available in the Open Science Framework (OSF) under the following link: https://osf.io/mnybf/

Depending on when you read this work-in-progress paper, the data may already be available there or will be added at a later date. We also plan to link to the final paper on the pre-registration [11] or in OSF project as soon as the final paper is published. However, this will take some time.

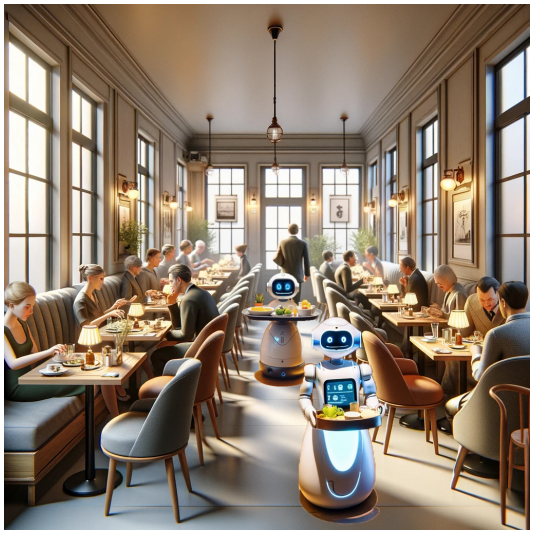

Figure 2: Restaurant Picture With Robot Waiters

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