Semi-Ethnographic Study on Human Responses to a Help-Seeker Robot

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ABSTRACT

This video presents how people responded to a robot asking for help at six cafes at the Oregon State University campus. Each cafe was visited twice over eight weeks between August and September 2019, always around lunchtime for a two-hour period. Many participants expressed their delight at the presence of the robot, as seen in their help and care behaviors, and communications with each other. The wizarded mobile robot, called a ChairBot, had a whiteboard indicating its current ordering request, as well as a money clip for payment. We conducted fly-on-the-wall observations, participant interviews, and grounded coding to understand why and how people helped the robot. People helped the robot because: (1) they were curious, (2) they wanted to help the people behind the robot, and (3) they wanted to be perceived as ethical. The video shows these interactions in context, with diverse human-robot communication strategies and unexpected emergent behaviors that illustrate the value of in-the-wild studies.

KEYWORDS

Human-Robot Interaction; Ethnography

Several investigations have considered help-seeking as a valuable backdrop for investigating HRI principles. Help-seeking is valuable to robots because they sometimes lack the capability to do certain tasks, e.g., pressing an elevator button. Thus incorporating people in the loop is often a useful HRI-centric solution [3]. Previous researchers have also used ethnographic methods to understand cultural reactions to robots, including attitudes, behaviors, and mental models [2]. This work joins these two prior efforts, deepening our understandings of human helping behaviors toward robots via the application of ethnographic methods.

A team of two roboticists and one cultural anthropologist conducted an in-the-wild study to understand if and how people will help a robot ordering food at a cafe. While the ChairBot [1] was wandering around a cafe space and asking customers if they would buy food via a sign and moneyclip, the researchers conducted *participant observation* from ethnographic tradition and *fly-on-the-wall observation*, a dual process we label semi-ethnographic. The six cafes contained various social norms and customers.
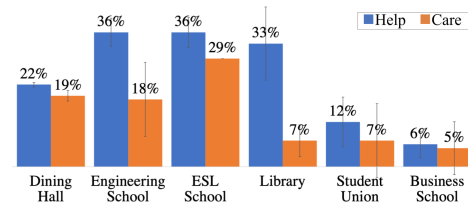
Figure 1: Mean percentage of people's Help and Care behaviors toward a robot seeking help ordering food over two two-hour cafe visits per location. (N=268)

The team conducted grounded coding on the video data (Fig. 1), labeling instances of help (getting the robot an item) and care (extra attention or positive social communication). To increase the reliability and to ensure the subjectivity of the results, the second author completed an hour of training with the reliability coder (first author) and performed open coding on 20% of the video data. Both the first and second authors conducted labeling and categorized the data separately. The agreement measured between the two raters was 0.82.

The data collected from participant observations and interviews revealed several motivations for participant help. A student going through his summer finals said, *"I imagined that a student who is preparing [for] a final had sent the robot to the cafe to buy food. I really wanted to help the busy student."* Others suggested a disabled person might have sent the robot for coffee. As it is common knowledge that a chair robot does not need food, other participants described their motivations as curiosity, just wanting to see how the robot would react. Finally, as addressed in the video, another participant motivation was to be perceived as morally positive: *"At first, I thought that it's a study testing people's ethical behaviors. In other words, would people steal the money from the robot?"*

The video presents the diversity of human responses across these six cafes on campus, covering effective robot persuasion strategies, ways in which people communicated with the robot, and emergent phenomena such as strangers stepping in if they saw someone else wasn't going to help, or the baristas at the cafe clarifying the robot to the customers.

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