

LEADERSHIP

To Make People Work Better With Robots, Make the Robots Imperfect

Human workers in a study accepted robots more when the robots made mistakes; 'the pratfall effect'



When robots made simple errors in a simulated workplace, people 'liked them more,' a researcher says. PHOTO: CENTER FOR HUMAN-COMPUTER INTERACTION

By Alina Dizik

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What does it take to make robots more welcome in the workplace? The answer may be programming them to make mistakes.

Researchers in Austria conducted a study recently in which interactions between robots and human co-workers were examined in a simulated workplace. When some of the robots made mistakes—something they were programmed to do—the robot-human interactions observed were more positive than in sessions where the robots did their jobs perfectly.

“People who interacted with the faulty robots liked them more,” says Nicole Mirnig, a research fellow at the University of Salzburg’s Center for Human-Computer Interaction, and one of six researchers on the study published in *Frontiers in Robotics and AI*.

The researchers programmed Nao robots from Japan’s SoftBank Corp., which have bodies that resemble humans, with two types of errors, including mild infractions of social norms (asking to repeat a statement) and physical goofs (dropping an object). The robots made mistakes in half of the sessions; in the other half, they performed flawlessly.

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The researchers observed that when the robots made mistakes, the humans noted the mistakes, then continued to work with the robot. The researchers recorded each session with a video camera, then tracked the humans' social cues such as body movement, laughing or shifting one's gaze, to determine how positively each user responded to the robots' errors. After each session, the human participants also shared their opinions about the interaction.

Designing error-prone robots creates "believable robot characters" that could enable better adoption of robotics technology through more natural interactions, Ms. Mirnig says. Robots that communicate with humans often elicit the same kinds of interactions as people, she adds.

"So many premises from human-to-human interaction relate to human-to-robot interaction," Ms. Mirnig says. Robots that are perceived as overly perfect might remind humans of their own shortcomings, making interactions less pleasant, she adds.

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The study confirms a long-held premise in psychology circles known as the pratfall effect, which suggests that people are more likable after making mistakes, Ms. Mirnig says. "Some mistakes can make people sympathetic," she says. "It holds true for robots as it does for people."

She concedes there will be limits to the ability of engineers to humanize robots through intentional use of errors. Humans may reject robots that make more serious and frequent mistakes, especially when the robot is attempting to provide a service, she says, such as health care or driving autonomous cars. "The question is how many errors are OK and how serious can they be," Ms. Mirnig says. "There will be a threshold."

Ultimately, she says, she hopes designers will create robots that can read a human's social cues and detect problems, so as to strengthen the quality of human-robot interactions.

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