Researchers find social robots require astute tuning to improve acceptability by the human mind

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After years of existing only in fiction, social robots are finally being designed that can more closely emulate how people express themselves, interact and learn – and doing so while performing jobs like teaching social behavior to children with autism or helping stroke patients with their physical rehabilitation exercises.

But what does it take to make a robot social and engaging? Should it walk and talk just like a person? Should it be emotionally expressive and responsive? Does the personality of the robot matter? What's needed to get a robot and a human to work well together?

According to Professor Maja Matarić, University of Southern California and director of USC's Center for Robotics and Embedded Systems, while there are many challenges ahead, one of the biggest remains getting the robots to match the needs and expectations of the human mind. "How we interact with embodied machines is different than how we interact with a computer, cell phone or other intelligent devices," says "We need to understand those differences so we can leverage what is important."

Matarić has developed social robots for use in a variety of therapeutic roles. According to Matarić, one of the keys for a successfully designed social robot is considering not only how it communications verbally, but physically through facial expressions and body language. Also important:

embedding the right personality. "We found that when we matched the personality of the robot to that of the user, people performed their rehab exercises longer and reported enjoying them more."

Another key is matching a robot's appearance to our perception of its abilities. Ayse Saygin is an assistant professor at the University of California San Diego and faculty member of the Kavli Institute of Brain and Mind. Last year, Saygin and her colleagues set out to discover if what they call the "action perception system" in the human brain is tuned more to human appearance or human motion. By using brain scans, they found that as people observed highly humanlike robots compared to less humanlike robots, the brain detected the mismatch and didn't respond as well. "Making robots more humanlike might seem intuitively like that's the way to go, but we find it doesn't work unless the humanlike appearance is equally matched with humanlike actions."

A social robot also needs the ability to learn socially. Andrea Thomaz is an assistant professor at the Georgia Institute of Technology and director of its Social Intelligent Machines Laboratory. At her lab, they have built a robot designed to learn from humans the way a person would -- along with speech, through observation, demonstration and social interaction. "In my lab, we see human social intelligence as being comprised of four key components – the ability to learn from other people, the ability to collaborate with other people, the ability to apply emotional intelligence, and the ability to perceive and respond to another person's intentions. We try to build this social intelligence in our robots."

More information: Read the complete story at: www.kavlifoundation.org/scienc … -recipe-social-robot

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