



"A socially ignorant robot always takes a direct path, stops if something is in its way and interrupts at any point to do its task," explains Kerstin Dautenhahn, a research professor in the School of Computer Science at the University of Hertfordshire in the United Kingdom. "But a socially interactive robot modifies its path to avoid getting too close to a human, waits until the right time to talk and fetches items without being asked."

Research on such machines is in its earliest stages. "There are a handful of researchers working on socially assistive robotics versus thousands

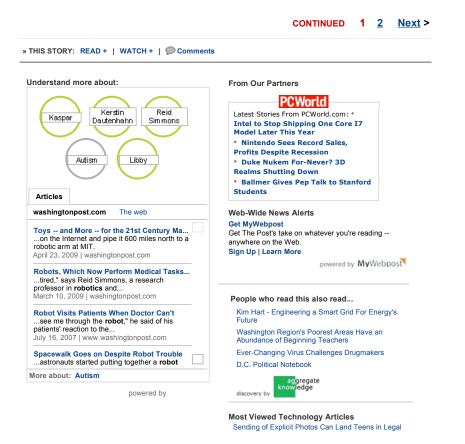
working on robot navigation, particularly for military applications," Mataric says.

Still, whether they're chunky vacuum cleaners or upright machines that can, after a fashion, walk, talk and respond, robotic creations seem to fascinate their human companions, and that, increasingly, is helping them ambulate toward new roles as medical caregivers. "Robots will never replace human interaction, but they can augment it," says Martha E. Pollack, dean and professor at the University of Michigan's School of Information.

"We can write algorithms to allow the robot to sense what a person is doing so it can respond immediately, appropriately and safely," Mataric says. "That wasn't possible 10 years ago."

Sensors attached to a person's wrist, elbow or clothing, for example, can allow a robot to detect the human's movements and respond. A heat sensor can instruct the machine to turn or move toward a warm body, enabling it to participate in a game of chase or create the appearance that a person has its full attention. "Artificial audition" technology has improved so that a robot can now track one conversation when several people in a room are talking. And eventually some machines might even provide a hug. To make that happen, François Michaud, a professor of electrical and computer engineering at the University of Sherbrooke in Quebec, is building a prototype with an element inside its motor that responds to feedback from the environment.

And if you're not in a hugging mood?



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