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## Robots set to overhaul service industry, jobs

**In the next decade, robots will increasingly take over low-level jobs, experts say, displacing human employees.**

By [Tom A. Peter](#) | Staff writer of The Christian Science Monitor

### Pittsburgh

At a mall in Osaka, Japan, lost shoppers can get directions from a robot that looks like something out of "The Jetsons." In hospitals across the US, disc-shaped robots deliver bed linens and meals to rooms. In some homes, robots are already doing a range of chores, such as vacuuming rooms and cleaning gutters. At least one company is working on a robot that works on a farm.

As a growing number of robots become capable of working alongside humans, the service industry may face a pattern all too familiar in the manufacturing sector: robots replacing humans in jobs.

"The service sector, which is a gigantic part of the employment landscape in the United States, is inevitably going to be a place where you can replace millions of people with robots that work 24/7 for less money," says futurist Marshall Brain.

While it will take a decade or more for droids, such as "Robovie," the mobile MapQuest in Osaka, to become pervasive in everyday life, the robotics industry is primed to begin producing robots that could eventually take the place of tour guides and bellhops.

The first robots to make a serious impact on the staffing in the service industry will probably carry out low-level tasks, experts say, allowing people to focus on chores that require higher levels of intelligence.

For now, automatons such as Robovie that use cameras and sensors to "understand" human emotions are more the exception than the rule.

"Dealing with humans is a very complex task. It takes us as humans many years to grow up and learn all the social etiquette and cues," says Joel Burdick, a professor of mechanical engineering who specializes in robotics at the California Institute of Technology in Pasadena. It will take time to perfect robots capable of understanding human emotions well enough to please people in service roles, says Dr. Burdick.

And, though he expects that robots will have a substantial impact on the service industry, he says

that in some cases humans will simply always want to interact with other humans.

But robots have already started their march into the service industry. Though they might not look like robots, automated checkout lines at grocery stores or touch-screen check-in kiosks at airports are the tip of the service industry's robotic revolution.

### **Already at the hospital**

Autonomous mobile robots are starting to appear, as well. In more than 100 hospitals across the US, nurses receive help from robotic "tugs" that tow carts that deliver everything from meals to linens.

Once loaded and given a destination, they can drive through crowded hallways, steering around obstacles and stopping if someone unexpectedly steps in front. If it reaches an impasse, such as a wayward gurney, it automatically calls a help desk, where a technician steers around the obstruction or calls the hospital to ask someone to move the roadblock.

Like many robotics companies, Aethon, the Pittsburgh-based robotics company that makes the tug, has targeted an industry riddled by staffing shortages. Instead of eliminating jobs, tugs alleviate strain on nurses and clinicians already spread thin, says Aldo Zini, president and CEO of Aethon.

"If I'm an administrator of a hospital, the last thing I want my nurses to do [is] push a cart down the hall or pick up [dirty dishes] or go downstairs to fetch a chart. I want those clinicians doing what they're trained to do, and that's providing patient care," says Mr. Zini.

Other companies hope to automate farm equipment to help with agricultural labor shortages, which some analysts say may worsen if immigration constraints tighten.

Still, it's only a matter of time before droids like the tug enter job markets where they will be competing directly with humans. At least one major hotel chain has contacted Aethon to inquire about using the tug for room service. Though the Pittsburgh company has elected to focus on hospitals for now, hotel owners could conceivably hire a call center in India to handle all room service orders and e-mail them to the kitchen staff, who would then load them onto a tug for delivery.

"If I were in the service industry, I wouldn't worry about losing my job tomorrow because of robotics," says Burdick. "But certainly, if I were at the low end of the service industry, I would be worried about, over time, could my job either be outsourced to India or China or replaced by more autonomy, whether it's a physical robot or a complex computer software system."

Though millions of jobs in the service sector are at stake, experts say the change should come gradually enough to create a natural shift in the workforce.

### **New lines of work**

In many ways, introducing robots in the service industry might be comparable to the time when personal computers entered the office space, eliminating many basic bookkeeping and accounting jobs, says John Wen, a director of the Center for Automation Technologies and

Systems at Rensselaer Polytechnic Institute in Troy, N.Y.

"A lot of people that we needed 20 years ago are no longer needed," says Dr. Wen. "However, [the personal computer] has spawned another huge industry – and I see robots doing exactly the same thing."

Wen believes that, while designing robots from scratch will always require an advanced degree, eventually programming preexisting robots could become as easy as designing a webpage, making it possible for people with a high school degree to work with robots.

"It's easy to say, 'The robots are taking over,' " says Julian Alssid, executive director of Workforce Strategy Center, a nonprofit organization in New York that works to create a globally competitive workforce in the US. "But it's all just so much more about an evolution."

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