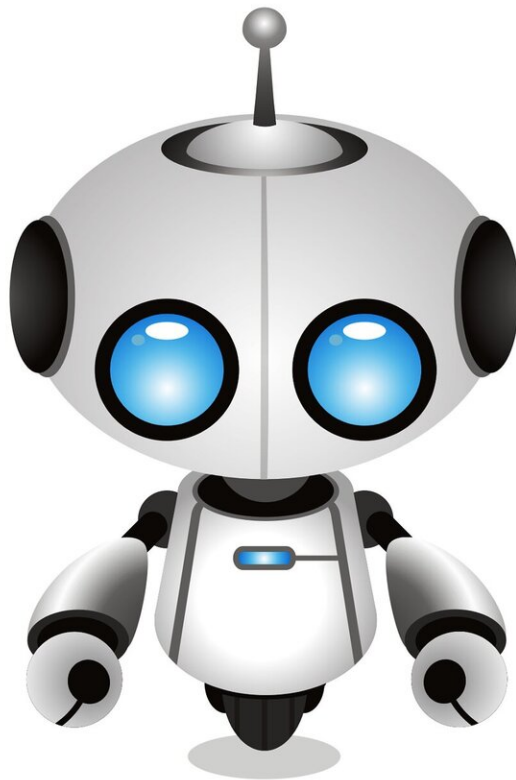


Robots on the rise in the COVID-19 economy

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The streets are empty of cars in Ann Arbor, but robot traffic is up.

Refraction AI's robot restaurant food delivery service has seen demand increase by four times since the COVID-19 crisis shut down Michigan last month, and the company's engineers are working furiously to expand the company's small fleet of three-wheeled REV 'bots.

Refraction is part of a surge in robot activity as the U.S. economy struggles to get back on track while maintaining self-distancing and exposing as few workers as possible in the workplace. The virus is accelerating robotics trends—from auto plant assembly lines to grocery store cleaning robots to security patrols—and that is likely to have enormous implications for the jobs of the not-so-distant future.

"This moment is a call to arms for robotics makers to really bring their technology to market that helps people. Particularly now in a time when there are so few options for doing tasks that we don't want to put people at risk for," said Refraction AI CEO Matthew Johnson-Roberson, an associate professor of engineering at the University of Michigan with 20 years of experience in the robotics field.

Refraction autonomous REVs (Refraction Electric Vehicles) began restaurant food deliveries at the first of the year from four restaurants to a small group of beta customers within a 2-mile radius in downtown Ann Arbor.

With the state's closure of in-restaurant dining and subsequent shelter-in-place order, Refraction's customer list has ballooned to 400, taxing the startup's five robots which have been hustling to and fro along the edges of abandoned city streets.

"A bunch of new restaurants have said we have to have delivery now. The big limiting factor is the number of robots we have," said Johnson-

Roberson, 36. "We've been working to expand to groceries, which is the more important need of the moment than takeout food."

Johnson-Roberson says the shutdown has accelerated customers' acceptance of robots as fear of COVID-19 has drawn them to technologies—think of the Zoom chat revolution—that they were unaware of before.

"It really changes consumer behavior across the board," he said. "A lot of what we're getting help with here is people getting comfortable with robots."

That comfort has been reinforced with strict safety guidelines to mitigate virus spread. The robots are wiped down between every delivery; upon food delivery, customers can open the 5-foot tall robot's door by phone instead of keypad; and the company has installed UV lights—a coronavirus killer—in the interior to disinfect the compartment and food.

With the added demand, the 15-person autonomous startup is looking to hire in these job-lean times. Some of its new employees come from the hard-hit restaurant industry.

"We've always thought about robotics as to how to improve people's lives. It can do things people don't want to do like bomb disposal robots, nuclear inspection robots," said the robotics professor. "They've figured out a task that's unpleasant for human beings and can do it better."

One of those unpleasant tasks is cleaning grocery aisles after hundreds of patrons have filed through in a typical COVID economy day.

San Diego-based Brain Corp. is the world's largest maker of autonomous navigation software for robotics giants like Minuteman, Tennant and

Karcher. Its business has expanded as grocery retailers like Walmart have brought in more cleaning robots.

"As retailers are required to clean more frequently and deliver more cleaning coverage, BrainOS-powered autonomous floor care robots are providing 8,000-plus hours of daily work—over 250,000 hours over the next 30 days—that otherwise would have to be done by an essential worker," said a company spokesperson. "This allows workers to focus on other tasks that are essential during this health crisis."

Walmart is one of Brain Corp's biggest clients and 110 BrainOS-powered robots are in service across Michigan in retail, grocery, and education applications.

Security robots are also in demand as companies have abandoned workplaces and employees work from home. For example, autonomous Cobalt Robotics bots are patrolling Metro Detroit businesses.

The U.S. auto industry is not likely to be immediately impacted with more robots in part because it is already heavily automated to reduce costs. Today, humans are scarce in giant assembly plants except at the assembly-line tail—and are therefore spaced safely. Stamping, painting, and body welding departments are crowded [robot](#) zones.

But with the enormous travel restrictions caused by COVID's spread, industry insiders say the auto supply chain is going to change drastically—and robots will play their part. In pursuit of lower costs, the supply chain in recent decades has expanded to China, Vietnam, and elsewhere.

"Now, we see huge risk of the supply chain when something like this happens," said Doug Betts, a manufacturing veteran and president of J.D. Power's auto division. "The management of risk will reel the supply

chain back in to the U.S. Labor costs are going to be high and that [supply chain](#) is likely to be established here with more robotics than what's used in other markets."

Example? A paint supplier abroad might use the cheaper labor of local people to spray paint onto parts. As those jobs move back to the U.S., they will be filled more by robots than people for safety, environmental and cost reasons.

Says robotics expert Johnson-Roberson: "Part of what we're talking about is job displacement and that is something that is a concern. We want to be careful that whatever we are doing here is making life better on the whole."

Amidst the coronavirus business devastation in Ann Arbor, he says robotics can help provide job and health security.

"People who run restaurants aren't sure they can come through this," said the Refraction CEO. "The fear that 25-to-50% (of) restaurants will go away is terrifying to me. And the jobs from dishwashers to bus people to caterers to line cooks—their livelihoods depend on their customers. If (the COVID crisis) goes on for six months—with one wave after another—we have to come up with a sustainable way to do this."

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