

How Ottonomy.IO Autonomous Robots Solve Food, Curbside & Last-Mile Delivery Problems - CEO Ritukar Vijay

Lynn Walford - Sep 06 2022



Autonomous vehicle technology is being deployed in Ottonomy.IO's delivery robots. Auto Futures talks with Ritukar Vijay, co-founder and CEO of Ottonomy.IO.

He reveals how the Ottobots safely and cheaply deliver outdoors and indoors for airport, curbside and last-mile deliveries.

Vijay worked in autonomous driving and robotics for fifteen years, starting with unmanned ground vehicles for defence, followed by autonomous robots for warehouses. He then focused on driver-assisted and autonomous driving technology. Before starting Ottonomy.IO, he worked at APTIV on the BMW urban pilot in Germany, where part of his team worked on autonomous robot taxis in Las Vegas.

He realised that it was going to take time for autonomous driving to become mainstream.

"Things changed from 2019 onwards everybody focused on electrification. First, let's make the cars electric. We will make them autonomous later. That is when we thought that we can use the know-how of autonomous technologies for solving real problems. We gravitated towards the delivery space because there was a labour shortage before COVID and COVID accelerated the need for delivery," says Vijay.

Due to COVID, delivery worker wages increased. In 2019, the average hourly wages were between \$9 and \$12 per hour. Now wages are around \$18 to \$25 per hour. It is going to stabilize around \$30 per hour, he explains.

"The gig economy cannot support the dependence of people for delivery. Because at the end of the day, customers like you and me end up paying \$7 for delivery when you order an \$8 burger. So, we started developing concepts and technology around that."



First Autonomous Robots Deployed at an Airport

The company learned that the Cincinnati International Airport (CVG) was looking for autonomous delivery options. It could not find robots that could autonomously navigate in crowded space into an environment where there is no GPS, says Vijay.

"We did some trials in November 2020 to make everybody comfortable that everything works. Then we deployed robots last year as one of the first airports to have autonomous delivery as an option. These are the first robots, which were doing autonomous deliveries," he says.

The robots deliver food and retail items past the security gates. Customers order online. The customer is notified of an ETA and the location when the robot arrives. A QR Code is sent to the customer, who scans the code on the robot when the robot arrives to open up the designated compartment.

The company was started in Santa Monica, California and moved its headquarters to Brooklyn, New York, where there are different types of testing and weather conditions.

Vijay says the Ottobots are designed to be shoulder height. Then they are accessible to different types of people--elderly, kids, children and even people in wheelchairs can access the packages. The robots' height also makes them visible to people.

"Accessibility is one of the core things which we thought about. The second thing was manoeuvrability. So these robots have four wheels that are all powered and all steerable."

Ottobots can do a crab mode, which is like a swerve mode. They can move sideways as well. They can take zero radius turns in place. Vijay calls them best in class with more manoeuvrable options than any delivery robots available on the market.



What Are the Safety and Autonomous Features of Ottobots?

There is human-robot interaction around the robot through speakers and large screens to alert bystanders.

"At airports, we decided to play some music on the robot. There is a playlist on the robot itself. So that people are not shocked that something is quietly coming behind them," says Vijay.

Ottobots have two cabins for storage D1 and D2. The D1 can fit five Happy Meals and D2 can fit seven to eight pizzas.

"It is a lidar, camera and other safety sensor-based system. So the robots can see even visibly in unclear areas and at night," says Vijay.

The robots have geometric information coming from LiDAR. Semantic information and depth information comes from cameras. The ultrasonic sensors, which are short range, ensure that the robot is completely safe, and does not read anything wrong because of any different type of weather conditions.

He says the Ottobot software, developed in-house, is rule-based probabilistic methods with deep learning that can deal with "black swan" and edge case scenarios.

"There is an infrastructure in place. If the robot is not able to make any decision, then a teleoperator can help in that case. So far, after six months at airports, where these robots are navigating within crowds, we have not encountered a single instance where it happened. But we have a provision because it provides the second level of faith," he says.

Recently, the company announced its latest generation of robot, called Ottobot 2.0. The robot can work in both indoor and outdoor environments.

In Brooklyn, New York, Ottobots deliver in the Old Navy Yard where the Ottonomy.IO office is located. They are running pilots with a university and a few retailers for the last-mile delivery.



Where Can Ottobots Operate?

"After doing pilots with three of the largest retailers in the US. We realised the updates would solve the entire use case of not only airport deliveries but also curbside and last-mile deliveries," says Vijay.

"The most important thing is that since we started with airports, these robots can navigate autonomously - in indoor and outdoor environments. So, they can bring items from inside the store, to a parking lot."

On large campuses, robots can navigate to the receptionist and deliver. The receptionist can place packages in a cabin and take them out.

Because of the modular cabins, the company can focus on retailers with the capacity of 100% of a typical shopping cart and also on food and beverage companies expanding the market for the robots, he adds.



How Much Time, Money and Fuel Do Ottobots Save?

"Ottobots can reduce the delivery cost by 60-70% for last-mile delivery. That is a huge benefit, which not only goes to the enterprise customers, but to the end customers as well," says Vijay.

Ottonomy.IO robots are available on a 'RaaS' (Robotics as a Service) model, the business pays a monthly fee while the consumer pays a fee for delivery, Vijay reports.

The Ottobots can enable local businesses to beat the delivery times of major e-tailers and save fuel.

"Retailers have a once-in-a-lifetime opportunity to compete with the e-commerce giants. If you order a pack of diapers from a popular e-commerce website. They come to the distribution or fulfilment centre, and the van will bring that item to your doorstep. However, normal retailers are located closer to you. So, automated deliveries can be meaningful and powerful, from an environmental perspective and a time perspective, to get things to you. Literally, you can get something in half an hour - instead of waiting for two to three hours without overstressing, burning more fuel or impacting the environment much," he says.

"Imagine if you have to deliver a pack of diapers. And you have to use a large vehicle to do that. With a robot, almost 30 to 40% of carbon emissions for small distances can be reduced straight up. Even if we penetrate 10% of the market, we are actually saving 3 to 4% of fuel emissions."

Vijay said he can not reveal where the robots are being tested.

He states: "We are making very good progress with one of the largest retailers in the United States. And, we are working on unattended deliveries. Soon, you will hear something which solves the problem of unattended deliveries."

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