



**A**lthough robotics is only at the beginning of its development, some products are already actively used in the modern world, often replacing human labor.

## How about a robotic waiter?

Yes, yes, you heard right. Robotization is considered one of the most effective methods of solving the problem of personnel in the future. And it is not about replacing people with AI but rather about optimizing the most

understandable areas of employees' work.

The use of robots is a new opportunity to improve the quality of service and the profitability of public catering establishments. And while vending machines and mobile ordering apps are becoming more and more familiar to consumers, robotic waiters are still a novelty. Are consumers ready to be served not by an ordinary person but by a robot?

**T**he idea of using robots instead of waiters is far from new. Back in 2015, the management of the famous Singaporean restaurant chain Timbre announced that they would willingly accept such a replacement. Its representatives believe that robotization in the kitchen and the service room will help increase the restaurant's productivity by 25%.

### Now robots are divided into:

- Front of the house - serve guests
- Back of the house - close the tasks in the kitchen



Robotic hands in US Army

You can see more examples of the second group: robotic hands that fry burgers (Miso Robotics) or machines that prepare salads to go (Spyce). It goes without saying that even **the US Army recruited robots!** And we are not talking about robotic soldiers - so far, we are only talking about working in a military kitchen. Soldiers can now get their food straight from the iron hands.

**R**obots for the hall are less commonly used. One of the novelties presented at the NRA Show in **Chicago** is the **Penny 2 robot** (Bear Robotics).



Penny 2 robot

The model knows how to move along narrow corridors, navigate the crowd, deliver food and pick up dirty dishes.

The new model has a tablet from which you can take orders and communicate with the guest. Also, Bear Robotics has a robot that replaces busboys in restaurants.



Of course, **China** became the ancestor of service robotics. It made a mighty leap forward in many industries, leaving the world's most considerable powers far behind them. Just think about it: back in 2010, the Chinese **Dalu Robot Restaurant** began using its robotic developments to serve customers. The waiter robots here looked like Star Wars droids. Each machine was equipped with a sensor to determine where the order was received from. The restaurant tables were arranged in a circle. Robots delivered trays of food and drinks, moving from table to table on bicycles.



Dalu Robot Restaurant

Of course, now these robots look relatively primitive - after many years, Chinese developments have been used in many countries. Consider, for example, their neighbor, Japan. Like many other countries, **Japan** is currently suffering from a chronic staff shortage in the hotel and restaurant industry. According to government estimates, the number of employees in this sector has decreased from 4.05 million in 2020 to 3.82 million in 2021. In addition, the number of catering establishments' visitors has reduced due to the risks of contracting a coronavirus infection. However, restaurateurs offer an innovative solution to this problem, corresponding to modern technological trends - the introduction of waiter robots. We are talking about BellaBot robots with wheels for movement



BellaBot

and monitors shaped like a cat's face to communicate with visitors. Robots manufactured by Chinese startup Pudu Robotics will serve a table of four customers at all stages: they will take orders, advise on menus, collect dishes, and also give the bill. In the first stage, which started in April 2022, Skylark plans to introduce 1 thousand robots, but their number will double by the beginning of 2023. By the end of 2022, BellaBot robots are expected to appear in 60% of the restaurants holding. The first robot waiters will start working in some Gusto restaurants and throughout the Syabuyo shabu chain of classic Japanese cuisine. The holding's investments in this project currently amount to about \$380 million



**L**eoTronics also did not stand aside and introduced its **LeoHelper** model to the world market. The robot is equipped with laser navigation to avoid obstacles, various sensors for precise localization, and a remote monitoring and debugging module. It also has the following features:

- Fully autonomous navigation system
- Does not require unique markings on the floor, stickers with QR codes, radio beacons, and other technical elements that violate the room's design. The robots are guided by the data obtained due to visual scanning
- Possibility to independently deliver electronic menus to visitors and collect orders
- In addition, the function of the hostess can be additionally built - to meet guests and escort them to free tables



On the command of the hall administrator, the electronic waiter picks up ready-made dishes from the kitchen, delivers them to visitors, collects dirty dishes, and independently goes to recharge if necessary after notifying the operator.

**A**nd how about drinking some alcohol, kindly poured with an iron hand under the guidance of AI? Two robots masterfully serving drinks behind the counter is the favorite show of Bionic Bar visitors on one of the liners of the American cruise company

## Royal Caribbean.

To order, a guest needs to choose a drink from 30 options in the menu on a tablet or smartphone by downloading a mobile application. Or you can ask for an



Robotic hands in the American cruise company Royal Caribbean

individual drink with the available ingredients. Hundreds of bottles of alcohol hang upside down over a matt bar run by two robotic arms. These robotics bartenders mix and shake cocktails and mocktails, then slide the ready

drinks down a long slit towards the guests. It takes less than a minute to prepare. Cocktails cost the same as mixed drinks elsewhere on the ship. Robotics bartenders take the same 18 percent tips as their human colleagues elsewhere on the boat.



drone waiters at  
Timbre (Singapor)

## Do you think that the imagination of robot developers is limited to the device of wheeled platforms for serving restaurant visitors? You're wrong! How about the drone waiter?!

For several years, the **Timbre**, a Singaporean restaurant chain, has been using flying drones instead of ordinary waiters. The reason for starting the operation of flying equipment instead of people is quite simple - the lack of workers. For more than five years, there has been an acute shortage of waiters in **Singapore**. Young people are increasingly refusing to go to work as a waiter because of the small salary and irregular work schedule. To cope with this difficult situation, the owners of Timbre decided to use modern technologies, which turned out to be a good choice for business development. The aircraft is controlled by a particular computer

program and are equipped with video cameras and infrared sensors, which exclude the possibility of colliding with people and restaurant furniture in flight. The cost of each drone is about 2000 euros. Thanks to special sensors, they can fly inside crowded areas without using a GPS, unlike other drones.

According to the estimates of the network owners, the use of drones increased the productivity of their establishments by 20%. These "employees" attract many new visitors and take some responsibility off the employees already working in restaurants, who can now work in higher-paid positions such as a cook or bartender, quickly moving up the career ladder.



**E**stonia also uses the service of drone waiters. The service developers assure that a visitor to a restaurant should now click through the mobile application, pay for the service, and wait. Within 5 minutes, the quadcopter will pick up the goods from the nearest warehouse, fly up to the pick-up point and serve the client. At the moment, such "drone waiters" deliver cold drinks to the suffering people on the beach. The quadcopter loads the desired bottle into a particular board's compartment, flies to the beach, and accurately drops the product into the weekender's hands. According to the tests and statistics, drones are proved more profitable than regular delivery services. On average, for every dollar paying a courier, the cost of a drone is only 20 cents.



Estonian drone waiters for the beaches

**A**nd finally, we would like to tell you a way to increase visitor satisfaction effectively. How do you like the idea of asking the visitor to smile at the monitor before getting into the restaurant? It has been scientifically proven that even a fake smile improves mood and increases life satisfaction.

Such an idea has been implemented in **Denmark, the United Arab Emirates, and China**. Cameras installed at the entrance allow only smiling people to enter the premises. And what could be better than a client who already comes in with a smile?!



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