AT YOUR SERVICE: ROBOT WAIT STAFF FIT THE BILL

COMMERCIAL SERVICE ROBOTS free people from mundane tasks, and have helped to protect hospital patients during the COVID-19 pandemic.

While many people celebrated Chinese New Year in January 2020, Felix Zhang received a call from a hospital. Zhang founded Pudu Robotics, a company in Shenzhen, China, specializing in commercial service robots, such as those that deliver food in restaurants. The hospital wanted to know if PUDU's robots could take food and medical supplies to COVID-19 patients in isolation rooms.

The company quickly donated one of their robots, and over the next few months, as the pandemic unfolded and many other hospitals needed similar help, PUDU ramped up production and sent out hundreds of robots to help ease the burden on healthcare staff and essential workers across China.

Founded in 2016, Pudu Robotics has seen enormous growth, with its robots now servicing major restaurant and hotel chains in more than 60 countries. Zhang became intrigued by robotics years ago while he was a graduate student at the Hong Kong University of Science and Technology. Since then, he has developed more than 60 patented techniques, including those in machine vision and motion, laying the groundwork for robots that can recognize different items and position themselves in a room.

Among the various ways to put robots to work, Zhang identified service jobs, such as those undertaken by wait staff, as an underdeveloped application. "It's a challenge for robots, as restaurants represent one of the most complex indoor environments," Zhang says. "But restaurant service is a good fit for robots due to the nature of a server's task. They perform repetitive yet simple tasks which are better suited to robots. Servers can then focus on enhancing customers' dining experience."

▲ **PUDU has developed different types of commercial service robots.**

AWARD-WINNING DESIGN

He founded Pudu Robotics with restaurants as an initial target market. For a food service robot, one key ability is to see and recognise an array of different items, then select the correct ones. To achieve this, Zhang's team has trained the robots with a huge amount of data to enhance their recognition skills.

A robot should also be able to move itself accurately. By combining sensors, cameras, Lidar and advanced algorithms, PUDU's robots can position and navigate themselves, map out the complex environment of a room and move while avoiding obstacles. The first robot Zhang's team invented — the PuduBot — was widely praised, winning a prestigious Red Dot Design Award in 2017.

Since then, PUDU has been intensively testing, refining and diversifying its robot designs and underlying AI technology to suit the many environments that may need service robots today. The team has now developed a variety of delivery, cleaning and disinfection robots for use in restaurants, as well as hospitals, schools, shopping malls, offices and factories.

Zhang also attaches great importance to training talent in the field of robotics. Recently, PUDU has established a fund to support a robotics contest aimed at university students, spurring innovation and tapping the potential of future engineers.

Going forward, Zhang hopes that PUDU's robots will help address labour shortages that will be a problem in countries with ageing populations. In the meantime, "I hope our robots can free people from repetitive tasks, so that they can pursue more meaningful and fulfilling work," Zhang says. ■

PUDU

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