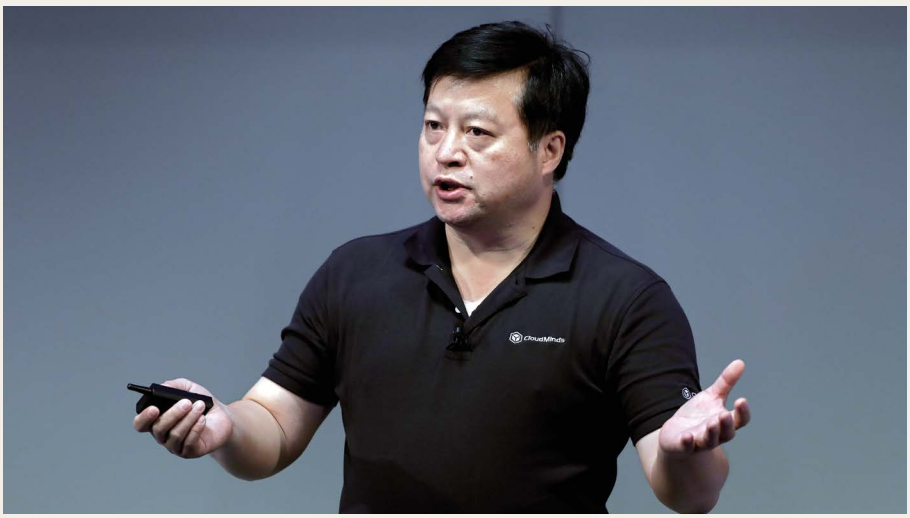
Q&A

Bill Huang
Robot engineer

Bill Huang is chief executive of CloudMinds, a Chinese–US company that provides a cloud-based robot operating system. He explains how the COVID-19 pandemic has accelerated his firm's application of robotics technology in real-life situations.



KIYOSHI OTA/BLOOMBERG VIA GETTY

Bill Huang is the founder and chief executive of CloudMinds, a robotics company in Beijing.

What does your company do?

I founded CloudMinds in 2015 with the long-term goal of making humanoid robot nannies that could be used to help parents who are struggling with the demands of running their home while working full-time.

These kinds of robot are extremely complicated to make because they require sophisticated artificial intelligence to perform a wide range of duties — such as feeding and dressing children.

In the short term, we began by focusing on making robots for three industries: hospitality, retail and health care. We currently produce four types of robot. Humanoid robots for reception work; security patrol robots to guard empty private land or offices; cleaning robots; and intelligent vending machines that can see and talk to you — a popular feature in China and southeast Asia.

How did the outbreak affect your work?

On 24 January, the day after the Chinese government imposed a lockdown on the city of Wuhan, we shifted our company's focus to help to fight the spread of the virus. Since the outbreak, all Chinese robot companies that I know of have done this. Within weeks, we were providing proposals to hospitals for robots that could disinfect wards, monitor temperatures and dispense drugs.

On 28 February, we began setting up China's first robot-run ward, which was designed to prevent staff at Wuhan Wuchang Hospital from contracting COVID-19. It was operational by 6 March, but just four days later it was suspended, because cases of the virus had dropped so sharply across the city.

It was a big experiment for us. As far as I know, there has never been a fully automated, robot-run medical ward in China. We had just weeks to organize its design, reach out to other companies to provide extra equipment and find ways to transport and ship the hardware and necessary engineers to the hospital during lockdown in Wuhan as the rest of China was closing.

How did the robot ward work?

The ward was set up in Wuhan Hongshan Sports Centre. We designed it to be suitable for around 200 people who were demonstrating early symptoms of the virus and needed medical care but were not seriously ill.

In total, we had 12 robots performing different functions, ranging from the delivery of food, drinks and drugs, to monitoring vital signs and disinfecting the area. Outside the room, clinical staff controlled and monitored the robots' movements.

Before we opened the ward, engineers from CloudMinds mapped the area and uploaded its geographical information to a cloud-based server. The robots used these information points to navigate the ward. Our engineers also installed a large screen outside the ward that displayed the health information of each individual, and was used by doctors and nurses to assign the robots to their next task.

Patients were also given bracelets fitted with sensors to measure their heart rates and temperatures.

What were the risks involved?

Our two major concerns were connectivity and technical malfunction. We were less concerned about people's reaction to them because in my experience, people tend not to find robots scary. We've actually found that people like the robots because they're fun to look at and relieve boredom.

All our robots are connected to a central cloud brain by individual, secure virtual networks that run on a mobile operating system. We rent robots to customers, along with operating software, and connect the units to the cloud, where engineers provide technical support. However, if the robots lose their mobile signal then they stop working. Before I started this company, I was a telecommunications engineer and head of research for China Mobile, the world's largest mobile operator. We made an agreement that if the 4G signal dropped, it would be boosted by China Mobile.

Happily, there were no hardware failures and the hospital's director said that if the same kind of event happened in the future, he wouldn't hesitate to roll it out again. That was nice to hear.

Where are the robots now?

They're resting back at our company's headquarters in Beijing. On the basis of the feedback from medical staff and patients, my team is doing further research and development to improve the robots in case they're needed again.

Interview by Sarah O'Meara.

This interview has been edited for length and clarity.