

Japan Loves Robots, but Not for Preparing Fries or Driving Buses

Finding Limits Of Automation

By MOTOKO RICH

ASAHIKAWA, Japan — Removing the tiny eyes that pock-mark potatoes is dull, repetitive and time-consuming work — perfect, it would seem, for robots in a country where the population is declining and workers are increasingly in short supply.

But it's not so simple.

When a food processing plant that makes potato salad and stews in Hokkaido, Japan's northernmost island, tried out a robot prototype designed to remove the potatoes' eyes, the machine was not up to the task.

The robot's camera sensors were not sensitive enough to identify every eye. While human hands can roll a potato in every direction, the robot could rotate the vegetables on only one axis, and so failed to dig out many of the blemishes that are toxic to humans. Other perfectly good pieces were carved away.

“Fundamentally, it could not do the work to the standard of humans,” said Akihito Shibayama, a factory manager at Yamazaki Group, which operates the plant in Asahikawa, a midsize city in the middle of Hokkaido where 30 workers process about 15 tons of potatoes a day.

Japan, the world's third largest economy, hopes that robots and other types of automation will help solve its demographic problems and impending labor shortage. That priority is reflected in a government blueprint, dubbed Society 5.0 and repeatedly emphasized by Prime Minister Shinzo Abe.

But businesses are struggling as some jobs that seem ripe for a robotic takeover prove remarkably difficult to outsource to a machine.

Robots can “perform simple tasks but not tasks that require judgment or the ability to evaluate a change in a situation,” said Toshiya Okuma, associate director of global strategy in the robot business division of Kawasaki Heavy Industries, a leading Japanese developer of robotics that has long helped automate car factory assembly lines.

Looking to robots allows Japan to avoid hard choices about immigration, a delicate topic in a country reluctant to let in many outsiders. But it's also a good cultural fit.

Japan was an early adopter of robots, installing them in car factories starting in the 1970s. And some of the most beloved Japanese touchstones are robots.

Doraemon, a cuddly blue robot cat, stars in a comic book series and one of the country's longest-running television shows. Astro Boy — or Tetsuwan Atomu in Japan — is a superhero in comics, television shows and movies, a kind of android equivalent of Pinocchio who fights for peace between robots and humans.

Still, however hospitable Japanese businesses have been to robots, they have learned that ro-

Eimi Yamamitsu contributed reporting



PHOTOGRAPHS BY NORIKO HAYASHI FOR THE NEW YORK TIMES

Factory workers scooping potato sprouts in Asahikawa, and a cow entering an automated milking stall elsewhere on Hokkaido. Robots muff tasks requiring judgment, a corporate official conceded.



“Real world robots are regarded for the most part as benevolent and as a kind of symbol of an advanced, technologically savvy society,” said Jennifer Robertson, a professor of anthropology at the University of Michigan and author of “Robo Sapiens Japanicus: Robots, Gender, Family and the Japanese Nation.”

“I think the Japanese have been more innovative in thinking about applications of robotics in everyday life,” Ms. Robertson added. “But the hype got in the way of reality.”

Helping drive the interest in robots are concerns about the declining population in Japan, where births are at their lowest level since 1874. Already industries like manufacturing, caregiving, construction and agriculture are starting to run low of workers.

In Japan, “instead of displacing workers, you are simply replacing workers,” said Todd Sneider, deputy division chief for the Japan division of the International Monetary Fund.

In Hokkaido, for example, where there are 1.2 job openings for every working-age resident, recent tests of autonomous driving trucks have not been perceived as a way to get rid of workers since they are already in short supply, prefectural officials say.

Hokuren, a food company that processes beet sugar in northeastern Hokkaido, needs about 250 drivers during the peak fall season to transport 6,000 tons of beets a day from farms and stor-

age facilities to its processing plant.

Because of intense labor shortages this year, Hokuren tested autonomous vehicles manufactured by UD Trucks, a Volvo subsidiary based in Japan. But Hokuren officials say more tests are needed to ensure that vehicles can handle impediments like snowy or icy roads or changes in traffic lights.

Genyou Imai, 48, the owner of a trucking company that regularly

An alternative to immigration for a shrinking work force.

supplies drivers to Hokuren, acknowledged that he could not hire enough to meet his clients' needs and that the autonomous vehicles might free his company up for other kinds of work.

Although Parliament passed a bill last year to grant new visas to foreign workers to help cope with shortages, the government has consistently emphasized robots as more likely saviors.

“So where you would potentially have immigrants doing the jobs, you say, ‘Go make robots,’” said Selma Sabanovic, a professor of cognitive science at Indiana University who was a visiting scholar at the National Institute of Advanced Industrial Science and

Technology in Tsukuba, Japan.

Business leaders have expressed doubts that foreigners could quickly solve Japan's need for workers, in part because of societal resistance.

“Japan has kind of a very pure-blood race,” said Noritsugu Uemura, an executive in charge of government and external relations for Mitsubishi Electric, a leading electronics manufacturer. “I think not only could it take 20 or 30 years, but it will take more like 40 or 50 years to integrate immigrants into Japan.”

“We can't wait such a long time,” he added.

Robots have helped the Kalm dairy outside Sapporo, Hokkaido's capital, trim from 15 workers to five. Now eight robots milk more than 400 cows three times a day as jazz piano music plays over loudspeakers in the barn.

Each cow wears a sensor on its collar to signal the robots when it is time for milking. Automated gates corral the animals into stalls where the robots attach suction cups to the cows' teats. Computers track the volume of milk streaming into tanks.

Jin Kawaguchiya, chief executive of Kalm and a former banker who took over his wife's family's dairy business, said that to survive, it had to merge with several other local dairies that were also short of workers.

“The best thing we could do,” Mr. Kawaguchiya said, “was make it into a humanless process.”

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a foreign government had been involved in his escape.

On Twitter, Masahisa Sato, a member of the upper house of Japan's Parliament and a former top Foreign Ministry official, asked whether Mr. Ghosn “had the support of some country” in his departure.

“It's a huge problem that his illegal escape from Japan was allowed so easily,” he wrote.

A former governor of Tokyo, Yoichi Masuzoe, accused the Lebanese Embassy of helping to smuggle Mr. Ghosn out.

“It's a diplomat's work to exfiltrate Lebanon's national hero,” he wrote, providing no evidence. Calls to the Lebanese Embassy went unanswered.

Apparently caught flat footed, Japanese prosecutors rushed to ask a Tokyo court to rescind Mr. Ghosn's bail, according to the national broadcaster NHK, possibly leaving him to forfeit the \$9 million that he had paid for the privilege of living outside jail while he awaited trial.

Mr. Ghosn had turned over his passports to his lawyer, as a court had ordered, while he prepared for trial living in an elegant neigh-

borhood in central Tokyo.

His lawyer, too, seemed dumbfounded by the Houdini-like disappearance. Addressing the reporters outside his Tokyo office, Mr. Hironaka said Mr. Ghosn's departure was “totally unexpected.”

There had been no sign that Mr. Ghosn was preparing to flee, Mr. Hironaka said. To the contrary, he added, everything suggested that Mr. Ghosn had been preparing to defend himself in court.

Mr. Ghosn's bail conditions limited his phone use, and he spent most of his days in his lawyer's office, the only place he was allowed to use the internet. For months, he had been commuting from his home to meet with his lawyers and prepare for his trial.

All the while, a court-ordered camera monitored his doorway, recording his comings and goings. Whenever he went out, he suspected that the authorities and private investigators from Nissan followed him around the city, according to people familiar with the matter.

Mr. Ghosn spoke with his wife, Carole, for about an hour on Dec. 24, Mr. Hironaka said. Prosecutors had asked a judge to forbid the couple to contact each other over concerns that they might conspire to tamper with evidence or witnesses. The court had kept the couple from communicating for months, Mr. Hironaka said, and they had spoken only twice since Mr. Ghosn was rearrested in April.

Nevertheless, Mr. Ghosn stayed in touch with his family. His



KAZUHIRO NOGI/AGENCE FRANCE-PRESSE — GETTY IMAGES

“I want to ask him, ‘How could you do this to us?’” Junichiro Hironaka, Carlos Ghosn's Japanese lawyer, told reporters on Tuesday in Tokyo. He said his client's departure was “totally unexpected.”

daughter Maya visited him in Tokyo, according to people familiar with his movements. And his outings with his children would occasionally be reported by the Japanese press or pop up on social media, where commentators speculated about his welfare.

Mr. Hironaka said the legal team spent Christmas Day in court discussing preparations for Mr. Ghosn's trial, which was expected to take place sometime in 2020.

The team had planned to regroup on Jan. 7 for the first strategy session of the new year.

All three of Mr. Ghosn's pass-

ports were in his lawyers' possession, Mr. Hironaka said. It was one of the conditions of his bail, which his lawyers had won only after repeated, hard-fought attempts to convince the court that their client, with all of his wealth and power, was not a flight risk.

“He left his things here,” Mr. Hironaka told reporters. “It would have been difficult for him to do this without the assistance of some large organization.”

Mr. Ghosn's defense team had repeatedly spoken out about what it described as a “hostage justice” system, complaining that Japanese courts and prosecutors had

put him at an almost impossible disadvantage as he sought to defend himself.

“I wanted to prove he was innocent,” Mr. Hironaka said on Tuesday. “But when I saw his statement in the press, I thought, ‘He doesn't trust Japan's courts.’”

The Japanese media rushed for clues as well, but news outlets were hampered by skeleton staffs and closed government offices ahead of New Year's Day. NHK reported that border control officials in Japan and Lebanon had no record of Mr. Ghosn's leaving the country, speculating that he may have used a fake passport and an

A WELCOME FUGITIVE

In Lebanon, where Carlos Ghosn arrived after his flight from Japan, he is seen as something of a national hero. Business, Page B1.

assumed name.

But in Lebanon, the minister for presidential affairs, Salim Jreissati, said late Tuesday that Mr. Ghosn had “entered the country legally using his French passport and Lebanese ID.”

Mr. Jreissati said the Lebanese government had not been notified in advance of his arrival, adding, “We were all surprised.”

“The government has nothing to do with his decision to come,” he said. “We don't know the circumstances of his arrival.”

In France, a deputy minister for economy and finance, Agnès Pannier-Runacher, said she had learned about Mr. Ghosn's flight from news reports. “We have to understand what happened,” she said on France Inter radio.

Mr. Ghosn is not above the law, she said, and “if a foreign citizen fled the French justice system, we would be very angry.” But she noted that, as a French citizen, he could use the country's consular services.

A group of children may have been among the last people to see him before he left Japan, according to a report in The Asahi Shimbun. It described the possible sighting on Friday morning in much the way one would an appearance by Bigfoot or the Loch Ness monster.

“His eyebrows stand out,” the 12-year-old girl told a reporter combing the streets near Mr. Ghosn's home for clues about his disappearance.

“Everyone was saying to each other, ‘Isn't that Ghosn?’”

Ben Dooley reported from Tokyo, and Michael Corkery from New York. Reporting was contributed by Makiko Inoue and Eimi Yamamitsu from Tokyo, Elian Peltier from London, Hwaïda Saad from Beirut, and Amy Chozick from New York.