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MONEY & JOBS

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MADE IN THE MIDLANDS

Robots come in handy

JAMES R. BURNETT/THE WORLD-HERALD

Robots equipped by CapStone Technologies handle 4.2 million pieces of mail daily at First Data, a job that humans used to do. First Data's Ram Parajuli is at back.

A thriving Nebraska technology company says it's 'the nature of our society' to automate jobs

By Cole Epley
WORLD-HERALD STAFF WRITER

The two most productive employees at First Data Corp.'s print mail facility at 72nd and Pacific Streets are virtually indistinguishable from each other.

Each has the same name, and they share Japanese and Nebraskan ancestry.

Neither takes vacation, and they don't have health benefits.

They don't need them, because they're robots.

And their customized "hands" were designed by a team of Nebraska engineers — one each from Omaha, Bellevue, Lincoln and Eagle, according to the patent award.

Together, the two yellow, six-axis robots made in Japan and their hands handle about 4.2 million pieces of mail every day at one of the last stops for print mail moving through First Data's sprawling facility.

Where six humans once stood to perform repetitive, manual labor for any one of three eight-hour shifts, the robots now grab and hold cardboard sleeves for 14,000 trays of mail a day. The trays travel down the last few feet of conveyors before they're stacked onto pallets — by humans — according to their destinations.

The robots are called AutoViri, Latin for "automatic man," and Fritz Buglewicz knows them well. His name is included on the patent for the ones in action at First Data, one of the state's largest bulk mailers.

"The secret in the sauce, so to speak, is the end-of-arm tools," said Buglewicz, executive vice president of business development at CapStone Technologies, the company that developed the tools. "That's what does the welding, grasping or packaging, and that's what we patent."

With offices in Omaha and a headquarters in Lincoln, CapStone deployed its first robotic technology in Florida in 2005. The company originally formed in 1999 as a business

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First Data is one of the state's largest bulk mailers. Trays of mail travel down conveyors before they're stacked onto pallets — by humans — according to their destinations.

An image taken by Associated Press photographer Anja Niedringhaus in 2010 of an Afghan boy with Canadian soldiers on patrol in Salavat, southwest of Kandahar, Afghanistan.

Award honors spirited journalist

STEVE JORDON

WARREN WATCH

Warren Buffett's son Howard was a photographer first, a farmer second and a philanthropist third. His friendship with Associated Press photographer Anja Niedringhaus grew from photography.

"I really admired her work," he told The World-Herald. They had met when she won the Courage in Journalism Award from the International Women's Media Foundation in 2005.

"I could have stayed out of trouble most of my life but always have been drawn to the people who suffer in difficult situations," she said during that awards ceremony.

When Buffett put together "Fragile," the book of his photos and stories about people involved in conflict and poverty, he wanted to include one of Niedringhaus' photos from Bosnia.

Anja Niedringhaus

"Then a few people talked me out of it because it would not be 100 percent accurate to say they were my photographs," Buffett said. "I always regretted not including it. It was the best conflict photo I have ever seen."

The two met later in Germany, and she came to his home in Decatur, Ill., twice. He provided funds for her to attend Harvard University as a Nieman Fellow in 2007.

This month, Buffett arranged another honor for Niedringhaus. She was shot and killed by a gunman in east Afghanistan on April 4. Within days, Buffett's

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Robots: End-of-arm tools are key to success of CapStone — 'that's what we patent'

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engineering group and focused then, as it does now, on lean process improvement, or accomplishing the task as well with more efficiency.

The company relies on the Council Bluffs office of Acieta, formerly known as Ellison Technologies Automation, to manufacture the critical end-of-arm tools that makes its technology possible.

CapStone holds another patent for an end-of-arm robotic tool that takes envelopes from high-speed inserters that stuff them with coupons and credit card statements and places them into trays for shipping. It also uses robots to sort, stack and secure sleeved mail trays onto pallets that are then shipped out to mail distribution centers.

Optical sensors and other points of data collection along the conveyor line scan mail from the time it's printed to the time it goes onto a pallet. This helps CapStone prove its value to potential clients.

In addition, the automated audit technology gives clients the ability to argue its mail did, in fact, go where it was supposed to.

The U.S. Postal Service will begin enforcing a new bar code system this year that will enable it to better track the accuracy of mass mailers like First Data, which receive substantial discounts on individual pieces of mail due to volume.

Bill Novak

If a mail handler mistakenly diverted envelopes to the wrong destination, the Postal Service could recover discounts retroactively. Those costs add up quickly for even a fraction of the millions of mail pieces generated by First Data each day, and the automated audits can help combat potentially inaccurate claims.

Buglewicz said tenfold sales growth in the next few years is a possibility for his company.

"It's literally impossible for humans to keep up with some of these processes," he said, referring both to the volume and precision CapStone technology boasts.

"The death of print mail is greatly exaggerated," Buglewicz said. "It's not going away any time soon."

JAMES R. BURNETT/THE WORLD-HERALD

From left, CapStone's Fritz Buglewicz and Robb Hagen and First Data engineer Navid Ranjbari-Sisan watch the robots in action. Buglewicz says tenfold sales growth in the next few years is a possibility for his company.

Neither are the concerns that automation and robots are contributing to the obsolescence of jobs traditionally held by humans.

Mail clerks and mail machine operators face a 94 percent probability of automation, and mail sorters, processors and processing machine operators face a 79 percent probability of automation, according to a September 2013 study by Oxford University.

At First Data, 18 laborers displaced across three shifts by the AutoViri robots were "redeployed" into the facility's sorting operations, the company said. The Atlanta-based processor of electronic payments such as debit and credit cards employs about 3,000 in the Omaha metro area.

Bill Novak, senior industrial engineer at First Data, said automation "really is a necessity" as credit card companies and other industry partners require faster turnaround times for statements.

Novak said the CapStone robots, which were installed in 2009, have all but eliminated the risk of human laborers incurring repetitive motion injuries in the sleeving section.

Buglewicz said the return on investment for the AutoViri Sleever is about 12 months.

Hypothetically, Buglewicz said, CapStone's systems "can take what was a four-day process with 500 employees and make it into a four-hour process with a handful of employees."

That's including multiples of the robotic solutions the company has developed.

The replacement of human labor isn't something the company shies away from.

"That's the nature of our society," Buglewicz said.

Automation has pushed other Omaha jobs to obsolescence, as well.

Meter readers, for example, face an 85 percent likelihood of being replaced by automation, according to the Oxford study, and eight years ago, Omaha Public Power District had 45 full-time meter readers.

Today, it has five full-time and three part-time meter readers, thanks to a 2006 initiative to replace 330,000 electric meters with automated equipment that automatically transmits energy usage information.

The benefits, of course, are undeniable.

OPPD officials said the utility now averages less than one safety incident per year among its meter readers and handles more than 90 percent of customers' high-bill complaints on the phone, helping save money for customers.

Elsewhere, local manufacturers like the Ariens Co. plant in Auburn, about 70 miles south of Omaha, have deployed robots to perform welds next to human counterparts.

In Nebraska, the low unemployment rate has encouraged manufacturing automation.

"We just aren't producing a lot of young people who want to work in manufacturing plants," said Bob Bernier, director of the Nebraska Business Development Center at the University of Nebraska at Omaha.

Federal monetary policy also has encouraged automation by keeping interest rates low and allowing firms to invest in increasingly affordable automation technology rather than in training and hiring hard-to-find human labor.

Proponents of automation say new technology also generates different jobs. Increased output can lead to new sales positions and, as robotic technology becomes less expensive, higher adoption rates will require more skilled engineers and service technicians to develop, run and troubleshoot systems.

"Actually, the problem many manufacturers have is they can't find enough trained and educated personnel to fill the advanced manufacturing jobs that robotics and automation creates," said Bob Doyle, a spokesman for the Association for Advancing Automation.

"The real threat to jobs is when a company is no longer competitive."

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FORECASTING THE IMPACT OF ROBOTS

» A September 2013 study from the University of Oxford analyzed more than 700 jobs in the U.S. and assigned each a number according to its probability of automation. Tax preparers, telemarketers and data entry employees were among 12 occupations the study assigned a 99 percent probability of automation. (Notably, the study relied on machine learning, a form of artificial intelligence, to compute its analysis.) Those results are likely unsurprising to anyone who has recently filed a tax return online or fielded a robocall from a politician. The study concluded that about 47 percent of total U.S. employment is at "high risk" of obsolescence due to automation. "We refer to these jobs at risk (as those) we expect could be automated relatively soon, perhaps over the next decade or two," researchers wrote.

» Martin Ford, an author and Silicon Valley entrepreneur, forecast a national unemployment rate near 75 percent by the end of the 21st century in his 2009 book, "The Lights in the Tunnel." He argues that the obsolescence of human labor will decimate the economy since people can be consumers only if they have jobs and income. "Most people think of manufacturing when they think of robots, but there aren't that many manufacturing jobs left in the U.S. The really disruptive thing is when robotics and software automation moves more into the service sector." An example is a San Francisco company called Momentum Machines that is working on a robot that can cook and assemble 360 hamburgers an hour. The company's "alpha machine" can slice fresh vegetables, the company brags, and it grinds fresh meat immediately before cooking. "Think about what that could mean for fast-food workers," Ford said.

» The International Federation of Robotics, based in Frankfurt, Germany, forecasts the creation of 2 million to 3.5 million jobs in the next eight years thanks to robots. The February 2013 study, "Positive Impact of Industrial Robots on Employment," was a follow-up to a study of the same title published in 2011. Across the world, it found robotics was responsible for direct employment of 4 million to 6 million people in manufacturing through 2011; including indirect employment, that figure increased by 4 million. Direct jobs often include additional sales and marketing jobs due to increased productivity as well as high-skill, higher-wage positions for IT professionals, engineers and systems technicians.

