America's robot future: Rajant celebrates new HQ, plans for growth

philly.com/philly/columnists/joseph-distefano/americas-robot-future-rajant-celebrates-new-hq-plans-for-growth-20180702.html
Joseph N. DiStefano

 Is automation destroying familiar jobs, reducing drudge work, collecting more information than anyone expected, and opening opportunities?

Yes, yes, yes, and yes, say Robert Schena and Paul Hellhake, founders of Rajant, a leader among Pennsylvania's growing network of automation hardware and software firms. Several of them, including Rajant, are backed by the state-funded Ben Franklin Technology Partners and other area investors. The entire filed has grown as self-driving vehicles and the artificial intelligence that helps drive them have gained visibility.

Late last month, Schena and Hellhake presided over a free lunch, cool hardware demos by area robotics makers, and some excited talks about our automated future at their firm's new headquarters in Great Valley for what they billed as the Autonomous Summit. The founders of the 16-year-old, 100-employee company wanted to celebrate their success in the new wave of vehicle autonomy and call attention to what they say is a robotics boom in the state, as they boost sales to the U.S. military, mining, and other U.S. and foreign clients. Rajant plans to add 40 engineering, sales, and support staff in its new space over the next year.

Rajant makes BreadCrumb, a wireless multiband radio that Schena's and Hellhake's team developed after the 9/11 attacks, when New York City police and fire crews infamously couldn't communicate. Rajant engineers have shrunk the devices in updated versions, from the size of a car battery to a desktop calculator to a mobile phone, while packing them with more power and features. Connected into Rajant's Kinetic Mesh networks, BreadCrumbs have been developed to direct and monitor flocks of self-driving vehicles or flying drones.

As with blockchain, the electronic record-keeping system based on forced mutual trust by its users, a key appeal of the Rajant systems is that they can form decentralized networks that don't depend on a single command site. A Rajant-equipped team of vehicles can dig ore from a mountain and truck it to the plant, process images from public cameras across a city for police to study, or track airborne convoys of military drones in areas the Army occupies.

In his address at the summit, Jared Pratt, vice-president at Autonomous Solutions Inc., a Utah-based driverless-vehicle developer, said Rajant's communications network helps solve basic challenges of getting driverless vehicles to work together. "It's a great time to be in this space," Pratt said. Using BreadCrumb, "we've automated everything from small robots to 400-ton mining trucks."

Pratt sees this as the cure for a long list of problems plaguing mining and transportation business owners, investors, and managers. "There are lots of challenging issues with labor," he said.

For example, he cited how President Trump has moved to limit immigration even as many U.S. industries "rely on low-wage workers to make the ends connect." Labor restrictions have already hurt America's fruit-and-vegetable companies: "They are leaving up to 40 percent of their crop lying

in the field because they can't get it picked," Pratt said. That's a powerful incentive to automate farm labor jobs.

Meanwhile, American labor activists want to raise the minimum wage, which adds to corporate costs and gives owners another incentive to automate.

And, Pratt said, human miners in a number of countries have a special history of striking for better pay and working conditions: "We had a customer shut off nine months" in a job action, Pratt said. "They were losing hundreds of millions of dollars."

Pratt sees autonomous vehicle systems as the solution: "Manufacturers are looking to help customers address those challenges with this technology," he told the crowd at Rajant. "We can take any ground-based vehicle and turn it into a robot. Give it 'eyes' through perception sensors and capabilities. Give it command and control to help execute those missions." Give it powers of positioning and obstacle detection.

He showed a video of Rajant-assisted automated trucks at work, taking apart mountains, shipping out the valuable ore.

In this vision, not only some minimum-wage workers doing repetitive jobs but also more highly-skilled workers and technicians can be profitably dispensed with: Job instructions "become a lot more simple" when systems are automated. As in a fast-food restaurant, "the typical user is going to be grade-school-educated. Maybe they can read or speak English. Maybe they can't. It has to be very intuitive." Rajant and companies like it, he said, are "designing this very complex system in ways the user can operate effectively without the engineers."

Tesla's on-the-road driverless-car experiments have boosted expectations, Pratt noted. Legal and liability standards will need to accommodate whole systems of driverless vehicles. "This will happen," he promised the gathering. There will be "huge changes" for working people, but "we will collaborate and make this work."

And not just in the mines, or in the nation's truck fleets (which, with taxis, employ three million drivers, some of whom might be replaced by machines linked by digital communications).

"Our solution works pretty good with drones" in the air as well as autonomous vehicles, said Schena, of Rajant. "The market's exploding." He compared autonomous industrial development to where internet technology was 15 years ago, though without the government guidance that helped launch the internet: "This is happening locally and spontaneously … Slow, then fast."

Should Americans really accept all this mechanical autonomy as a good thing if all those humans risk being thrown out of work, I asked Rajant marketing chief Geoffrey Smith.

"Jobs are created also," Smith said. "A lot of the autonomy is replacing very defined, mundane jobs. Mining sounds cool, but it's a very boring job — to drive massive three-story trucks at seven miles an hour all day is boring."

Automate the trucks, and the remaining operators work "in a temperature-controlled environment with a joystick," a little more like a video game, he added.

There will be more security specialists, to protect the system from hackers: “We can’t have self-driving truckloads of gold taken by hackers,” said Smith.

So there’s plenty of opportunity if you can adapt skills that serve them in the years before the robots take over. “The connected vehicle is very, very new,” Smith concluded.

The idea isn’t to abolish jobs, but to “reallocate” them, Smith added. “We are hiring people for jobs that require skill. We are bringing on new staff to create new products” and sell them, he said. The remaining operatives will have much more advanced tools. If there are fewer drivers and laborers, there will be more engineers, data scientists.

Published: July 2, 2018 — 4:40 PM EDT