

## Startup creates robots with a sense of touch

By GINO FANELLI

For all of the progress made in the world of robotics, most robots are still a bit clunky.

Boston Dynamics is probably most well-known to the regular person nowadays. It's the producer of the robot dogs and human that have already shown the ability to run, climb, jump, perform simple tasks and balance when kicked out of place in a number of viral videos. What those robots are not great at is understanding nuance through touch and being able to distinguish more delicate tasks. Enter Organic Robotics, a Luminate NY competitor which has developed a stretchable, pressure sensitive smart fabric that can give a sense of touch to a robot, dramatically improve augmented reality experiences and help streamline motion capture.

"Robots are currently relying almost entirely on vision," said chief technology officer Alec Cornwell. "So we're working to help them have a better understanding of their environment and a more human feel and understanding of their environment."

Cornwell demonstrated how a robot can better understand its surroundings by showing a video of a robotic hand fitted with the Organic Robotics fabric. The hand is tasked with selecting a ripe apple from a group of three apples based on touch alone. The hand delicately grasps each fruit before selecting the red one in the center.

It's an impressive demonstration, but for a startup with a promising idea, the first step is finding what market is the best fit, and there are many applications for Organic Robotics' tech. In the augmented reality space, the tracking of hand positions is typically, at best, brutish. Organic Robotics' tech could relay the motion of hands in real time, with applications that run the gamut from improving training for surgical procedures to creating more subtlety in video games. The same can

be said for the world of athletics. A stretchable sensor can be utilized to effectively track workouts, in turn figuring out maximum efficiency for exercises.

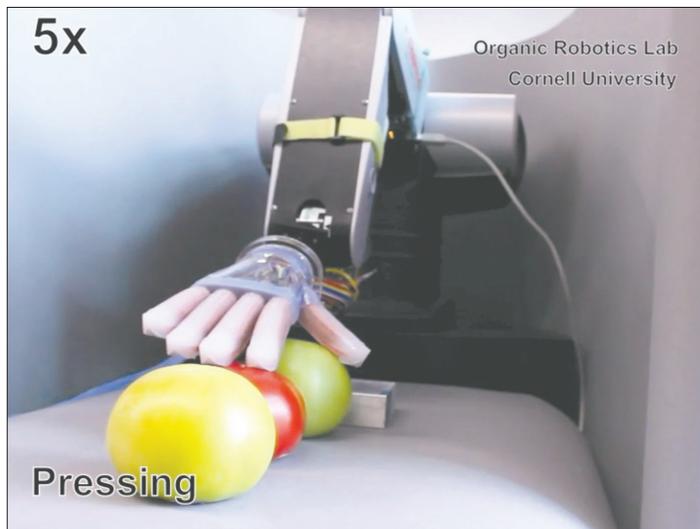
"If the human body is reconstructed at all in these virtual environments, they are typically represented by these big, clunky hands, and it's not a very accurate reconstruction," Cornwell said. "In virtual reality, there's a lot of applications with training and other precision application like surgery. In real life surgery, you need millimeter accuracy, but without being able to see your hands, it's hard to make an authentic training experience in those environments."

Born out of technology from Cornell University and now based at NextCorps incubator, Organic Robotics' tech is powered by what Cornwell called an optic lace. It is essentially a stretchable piece of fabric that holds an optical sensor able to detect deformation, translatable as touch and able to give extremely sensitive responses.

The tech is there, but as an extremely early stage company, Cornwell said the next major step is figuring out what market to head into.

"We really are still trying to figure it out," Cornwell said. "Some of the markets we've identified are more emerging markets, and we feel one that we have some real leads in is this robotics space, with trying to create a sense of body awareness for robots. That seems to be a good opportunity off the get-go."

The robotics market is one that is likely to go full bloom in the next few years. Boston Dynamics' first consumer product, the robotic quadruped Spot-Mini, for example, is expected to go to market later this year. Meanwhile, virtual and augmented reality have grown into a nearly \$17 billion industry in 2019, with expectations of hitting \$44.7 billion in the next five years. There are many lucrative avenues Organic Robotics could go as the company moves beyond the



Provided photo

Organic Robotics' robot hand uses optic lace technology to find the ripe tomato using only touch.

## Spotlight on Luminate

Ten companies composed of some of the brightest minds in the field of optics, imaging and photonics are fine-tuning their technologies inside NextCorps' Luminate NY accelerator. The winners of November's second Lightning Awards, these companies each received \$100,000 in funding, free residency in the accelerator and access to NextCorps' web of resources and mentoring. On June 27, the most promising of these 10 will receive a total of \$2 million in follow-on funding. Originally funded for two years, the Luminate NY accelerator has now been funded for three more years via \$15 million in additional state funding.

Leading up to Demo Day, the Rochester Business Journal is featuring profiles of the companies holding the keys to the next chapter in Rochester's history as the world's imaging center.

research phase.

At the core of that is Luminate. Cornwell said the experience in the accelerator, now near a close, has been invaluable in helping to establish the future of the company and how, logistically, they hope to establish themselves.

"Just being here in Rochester and having access to the optics ecosystem is incredible," Cornwell said. "For helping us try to

optimize sensors and be able to characterize them, but also just the advisers we've had access to have been incredible. They've been so invested in us and they've been working with us in these early stages to help us understand what we should be doing and what makes the most sense for our company."

[gfanelli@bridgetowermedia.com](mailto:gfanelli@bridgetowermedia.com)/585 775-9692