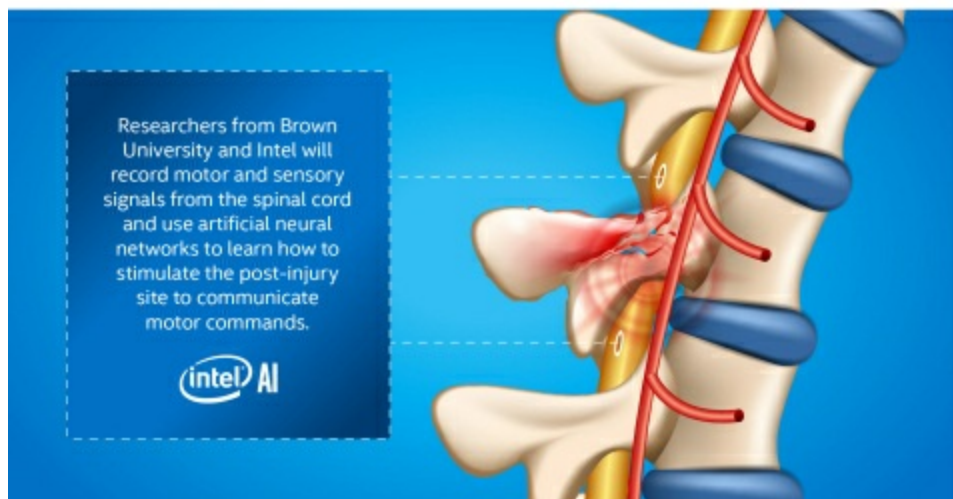October 3, 2019

intel.

With Hopes of Helping Paralyzed Patients Regain Movement, Intel and Brown University Deploy AI

SANTA CLARA, Calif.--(BUSINESS WIRE)-- Intel Corporation (NASDAQ: INTC):

This press release features multimedia. View the full release here:
https://www.businesswire.com/news/home/20191003005201/en/

Researchers from Brown University and Intel begin work on a study using artificial intelligence technology to help patients paralyzed by severe spinal cord injuries. (Credit: Intel Corporation)

What's New: Intel and Brown University today began work on a DARPA-funded Intelligent Spine Interface project that aims to use artificial intelligence (AI) technology to restore movement and bladder control for patients paralyzed by severe spinal cord injuries.

"As a Ph.D. student at Brown, I investigated how to interface the brain with machines as an application. Now at Intel, we're combining our AI expertise with Brown University's cutting-edge medical research to help solve a critical medical problem: how to reconnect the brain and spine after a major spinal injury."
–Naveen Rao, Intel corporate vice president and general manager of the AI Products Group

How It Works: During the two-year program, researchers will record motor and sensory signals from the spinal cord and use artificial neural networks to learn how to stimulate the post-injury site to communicate motor commands. Surgeons at Rhode Island Hospital near Brown University will implant electrode arrays on both ends of a patient's injury site, creating an intelligent bypass to eventually allow the severed nerves to communicate in real time. Researchers will leverage both Intel AI open source software such as nGraph and Intel AI

accelerator hardware to meet the real-time requirements of this application.

"A spinal cord injury is devastating, and little is known about how remaining circuits around the injury may be leveraged to support rehabilitation and restoration of lost function. Listening for the first time to the spinal circuits around the injury and then taking action in real time with Intel's combined AI hardware and software solutions will uncover new knowledge about the spinal cord and accelerate innovation toward new therapies," said David Borton, assistant professor of engineering, Brown University.

Why It Matters: The human body is unable to regenerate severed nerve fibers. In the case of a severe spinal injury, the brain's electrical commands will no longer reach the muscles, which can lead to paralysis. The National Spinal Cord Injury Statistical Center [estimates](#) there are 291,000 people with spinal cord injuries living in the United States, with more than 17,000 new cases each year. Over 30 percent of those spinal cord injuries result in complete tetraplegia or paraplegia.

More Context: [Intel AI for Social Good](#) | [Artificial Intelligence at Intel](#)

About Intel

Intel (NASDAQ: INTC), a leader in the semiconductor industry, is shaping the data-centric future with computing and communications technology that is the foundation of the world's innovations. The company's engineering expertise is helping address the world's greatest challenges as well as helping secure, power and connect billions of devices and the infrastructure of the smart, connected world – from the cloud to the network to the edge and everything in between. Find more information about Intel at [newsroom.intel.com](#) and [intel.com](#).

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