

Elon Musk's latest target: Brain-computer interfaces

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In this Tuesday, Sept. 29, 2015, file photo, Elon Musk, CEO of Tesla Motors Inc., talks about the Model X car at the company's headquarters in Fremont, Calif. Tech billionaire Elon Musk is announcing a new venture called Neuralink focused on linking brains to computers. The company plans to develop brain implants that can treat neural disorders and may one day be powerful enough to put humanity on a more even footing with future superintelligent computers, according to a Wall Street Journal report. (AP Photo/Marcio Jose Sanchez, File)

Tech billionaire Elon Musk is announcing a new venture called Neuralink focused on linking brains to computers.

The company plans to develop [brain](#) implants that can treat neural disorders—and that may one day be powerful enough to put humanity on a more even footing with possible future superintelligent computers, according to a Wall Street Journal report citing unnamed sources.

Musk, a founder of both the electric-car company Tesla Motors and the private space-exploration firm SpaceX, has become an outspoken doomsayer about the threat [artificial intelligence](#) might one day pose to the human race. Continued growth in AI cognitive capabilities, he and like-minded critics suggest, could lead to machines that can outthink and outmaneuver humans with whom they might have little in common.

In a tweet Tuesday, Musk gave few details beyond confirming Neuralink's name and tersely noting the "existential risk" of failing to pursue direct brain-interface work.

STIMULATING THE BRAIN

Some neuroscientists and futurists, however, caution against making overly broad claims for neural interfaces.

Hooking a brain up directly to electronics is itself not new. Doctors implant electrodes in brains to deliver stimulation for treating such conditions as Parkinson's disease, epilepsy and chronic pain. In experiments, implanted sensors have let paralyzed people use brain signals to operate computers and move robotic arms. Last year , researchers reported that a man regained some movement in his own hand with a brain implant.

Musk's proposal goes beyond this. Although nothing is developed yet,

the company wants to build on those existing medical treatments as well as one day work on surgeries that could improve cognitive functioning, according to the Journal article.

Neuralink is not the only company working on artificial intelligence for the brain. Entrepreneur Bryan Johnson, who sold his previous payments startup Braintree to PayPal for \$800 million, last year started Kernel, a company working on "advanced neural interfaces" to treat disease and extend cognition.

RISK OF OVERHYPE

Neuroscientists posit that the technology that Neuralink and Kernel are working on may indeed come to pass, though it's likely to take much longer than the four or five years Musk has predicted. Brain surgery remains a risky endeavor; implants can shift in place, limiting their useful lifetime; and patients with implanted electrodes face a steep learning curve being trained how to use them.

"It's a few decades down the road," said Blake Richards, a neuroscientist and assistant professor at the University of Toronto. "Certainly within the 21st century, assuming society doesn't implode, that is completely possible."

Amy Webb, CEO of Future Today Institute, pointed out that the Neuralink announcement is part of a much larger field of human-machine interface research, dating back over a decade, performed at the University of Washington, Duke University and elsewhere.

Too much hype from one "buzzy" announcement like Neuralink, she said, could lead to another "AI Winter." That's a reference to the overhype of AI during the Cold War, which was followed by a backlash and reduced research funding when its big promises didn't materialize.

"The challenge is, it's good to talk about potential," Webb said. "But the problem is if we fail to achieve that potential and don't start seeing all these cool devices and medical applications we've been talking about then investors start losing their enthusiasm, taking funding out and putting it elsewhere."

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