



Impact

Quadriplegic 'feels' again thanks to brain-computer interface and robotic arm combination

A brain-computer interface connected to a robotic arm helped a man paralyzed from the neck down 'feel' again, paving the way for next-generation prosthetics. NSF-funded research helped make it possible



A man manipulates a robotic arm via a computer chip in his brain.

[Credit and Larger Version \(/impacts/impact_images.jsp?cntn_id=243195&org=NSF\)](/impacts/impact_images.jsp?cntn_id=243195&org=NSF)

September 28, 2017

From buttoning a shirt to grasping a cup, the ability to manipulate objects is aided by the sense of touch, which is why traditional prosthetics limit patient function.

Earlier this year, however, a quadriplegic man experienced the sense of touch again through a robotic arm connected to a brain-computer interface (BCI) implanted in his head that allowed him to “feel” pressure on the robotic hand. The blueprint for the BCI-robotic arm system came from NSF-funded basic research that looked at the neural activity of monkeys as they manipulated objects.

The advancement is paving the way for future touch-sensitive prosthetics.

NSF Directorate(s):

Directorate for Biological Sciences

Locations

Illinois


Related Awards

[#1150209 CAREER: Vibration and Texture Perception \(/awardsearch/showAward.do?AwardNumber=1150209\)](#)

Related Websites

Mysteries of the Brain: Brain-Computer Interface: https://www.nsf.gov/news/mmg/mmg_disp.jsp?med_id=78912 <https://www.nsf.gov/news/mmg/mmg_disp.jsp?med_id=78912>

This NSF Impact is one of thousands of research outcomes made possible by NSF that help fuel the U.S. economy, enhance national security and sustain U.S. global leadership by advancing knowledge. You can search for more NSF Impacts at <https://www.nsf.gov/impacts> <<https://www.nsf.gov/impacts>>.

 [Get Impacts by Email <https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic_id=USNSF_250>](https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic_id=USNSF_250)

National Science Foundation, 2415 Eisenhower Avenue, Alexandria, Virginia 22314, USA Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (800) 281-8749