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Monkey trained to use robotic arm

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US scientists have taught a monkey to feed itself using a robotic arm and the power of thought. The experiment, revealed last night at a meeting of neuroscientists in San Diego, offers hope to people with spinal cord injuries.

A team from the University of Pittsburgh restrained the arms of a monkey and wired a neural prosthesis - a robot arm with a mobile shoulder, elbow and griping device - into its brain. The arm intercepted signals from electrodes attached to probes in the nerve cells of the motor cortex, the brain region that controls movement.

An algorithm devised at Pittsburgh interpreted the activity in the monkey's brain as the animal tried to move its own arm, and transmitted the signals to the robotic arm.

Four years ago a team from Duke University, Durham, North Carolina, used electrode brain implants to link a monkey to the internet and make it move a lever 600 miles away in Massachusetts.

In 1999, doctors in Tubingen in Germany, said they had helped two people with advanced motor neurone disease compose sentences on a computer just by thinking about moving their fingers.

But complex movements remained a challenge because of the number of brain cells involved. The Pittsburgh team tried to work out how the brain "knows" what it wants a hand to do. They developed an algorithm which acted like a polling system, taking a continuous tally of signals from sampled cells.

The team relied on the monkey to learn how to move the arm by trial and error. They placed food at various locations and the pinioned animal "thought" the movements that triggered the arm.