

Brain scanner, not joystick, is in human-robot future

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(Phys.org) -- Talk about fMRI may not be entirely familiar to many people, but that could change with new events that are highlighting efforts to link up humans and machines. fMRI (Functional Magnetic Resonance Imaging) is a promising technology that can help human move beyond joysticks to control robots via brain scanners instead. Now a research project exploring ways to develop robot surrogates with whom humans can interact has turned a corner. A university student's ability to make his robot surrogate move around, using fMRI technology, was successful. The experiment linked up Israeli student Tirosh Shapira in a lab at Bar-Ilan University, Israel, with a small robot in another lab far away at Beziers Technology Institute in France.

The research is part of an international project called [Virtual Embodiment and Robotic Re-Embodiment](#) (VERE).

Shapira merely had to think about moving his arms or legs and the robot, with a camera on its head with an image displayed in front of Shapira, successfully would do the same. If Shapira thought about moving forward or backward, the robot responded accordingly.

fMRI monitors blood flowing through the [brain](#) and can spot when areas associated with certain actions, such as movement, are in use. The fMRI read the student's thoughts, which were translated via computer into commands relayed across the Internet to the robot in France.

There is much more work to be done to advance this approach, however.

The researchers seek to devise a different type of scanning. An fMRI scanner is an expensive piece of equipment but the scientists believe that improvements in software might allow for a head-mounted device. Another research goal is to see if they can get humans to speak via the robot. The size of the robot will need modification, closer to the size and movement of a human, and engineered with a wider range of movement that would include hand gestures. In sum, according to the researchers, this experiment is only one of many steps ahead.

Medical applications for this technology are seen as promising, especially as scientists explore how patients with paralysis can interface with robots so that the patients can reconnect to the world. Another suggested application has been in the military, where [robot](#) surrogates rather than soldiers would be sent into battle.

More information:

via [BBC](#)

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