Mind-controlled toys: The next generation of Christmas presents?

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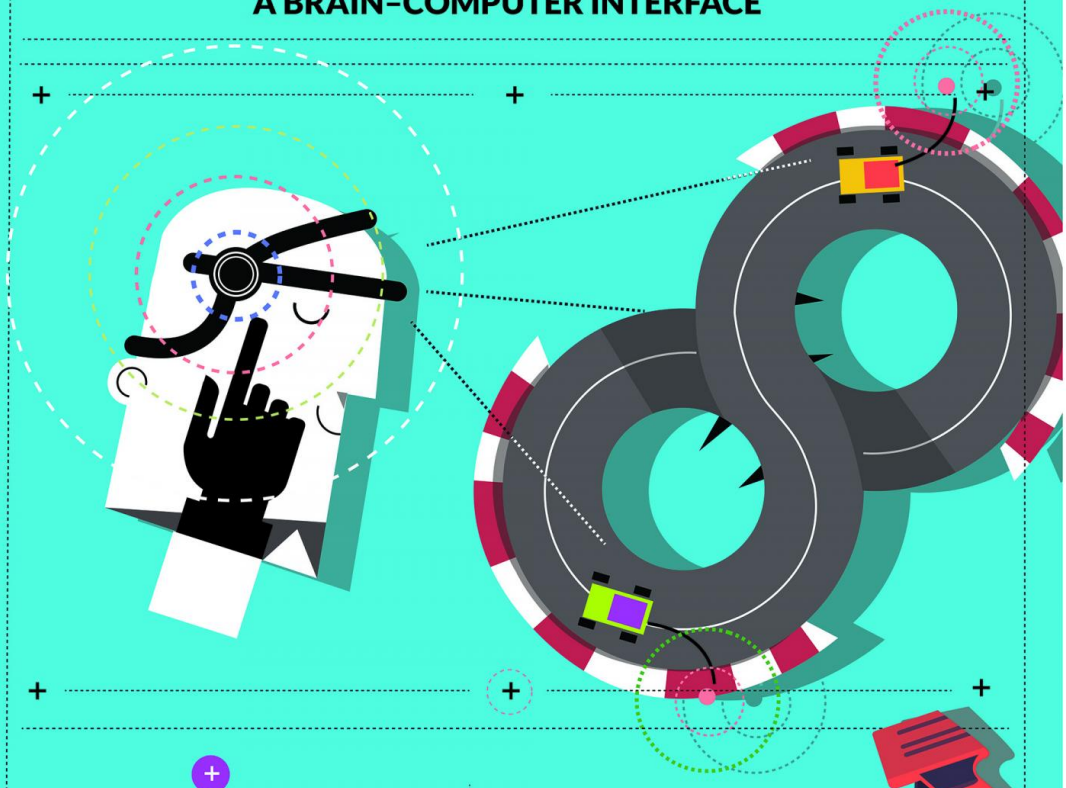
MIND CONTROL SCALEXTRIC

A BRAIN–COMPUTER INTERFACE



A brain–computer interface is a communication link between a brain and an external device. Using neuroscience and physics, you can race a car using only your thoughts!

Alpha waves are one of five types of waves generated by the brain, and correspond to concentration and relaxation levels.

Sensors in a headset measure the electrical impulses from alpha waves. This activity is processed by a computer, amplified and fed into the electrical circuit of the Scalextric track.

Instead of using a normal handheld controller, players can make the car go faster by concentrating harder. Amazing engineering in action!

Infographic on mind-controlled Scalextric. Credit: University of Warwick

The next generation of toys could be controlled by the power of the mind, thanks to research by the University of Warwick.

Led by Professor Christopher James, Director of Warwick Engineering in Biomedicine at the School of Engineering, technology has been developed which allows electronic devices to be activated using electrical impulses from brain waves, by connecting our thoughts to computerised systems.

Some of the most popular toys on children's lists to Santa - such as remote-controlled cars and helicopters, toy robots and Scalextric racing sets - could all be controlled via a headset, using 'the power of thought'.

This could be based on levels of concentration - thinking of your favourite colour or stroking your dog, for example.

Instead of a hand-held controller, a headset is used to create a brain-computer interface - a communication link between the human brain and the computerised device. Sensors in the headset measure the electrical impulses from brain at various different frequencies - each frequency can be somewhat controlled, under special circumstances.

This activity is then processed by a computer, amplified and fed into the electrical circuit of the electronic toy.

Professor James comments on the future potential for this technology:

"Whilst brain-computer interfaces already exist - there are already a few gaming headsets on the market - their functionality has been quite limited. New research is making the headsets now read cleaner and stronger signals than ever before - this means stronger links to the toy, game or action thus making it a very immersive experience.

"The exciting bit is what comes next -how long before we start unlocking the front door or answering the phone through brain-computer interfaces?"

Provided by University of Warwick