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Robot mastery in the blink of an eye

CHRIS GRIFFITH THE AUSTRALIAN SEPTEMBER 18, 2012 12:00AM

A 31-YEAR-OLD totally immobile Florida man has driven and raced a robot around a factory, controlling it using a single muscle on his forehead.

Michael Phillips has spinal muscular atrophy. He can't move his body, use his fingers, sit up, speak or even eat or breathe unaided. But from his bed in Tampa, where he has a Mac computer connected to the internet, he has remotely driven a robot around a building, negotiating it through doorways and down corridors, and even racing it against another robot -- all using the frontalis muscle on his forehead.

Despite his severe disability, Mr Phillips can signal with his frontalis at more than nine times per second. The signal is picked up using an electromyography sensor (EMG), and passed to his computer, which can interpret the timing of these muscle movements as keystrokes.

The system that interprets these muscle movements as key-strokes, called NeuroSwitch, has been developed by former CNN and NBC anchor Peter Ford, who recently adapted it to remotely controlling robots over the internet.

The technology offers a disabled person a virtual, avatar-like presence where they can independently move about, view their whereabouts and interact with people and their location.

The Australian recently reported on the technology, but at that stage no disabled person had used it.

Given that he cannot speak, we interviewed Mr Phillips, a well-known internet blogger and avid gamer, by email.

"I thought it was fun. It was like playing a game, but knowing if you drive badly, you're killing a \$10,000 robot and not just some digital jet-fighter or Volvo. In that way, it's totally exciting," he said in an email.

He said driving the robot (from the AnyBots robot factory in California) took him "0.3 seconds" to learn and was "just like controlling any game character".

"Having played World of Warcraft for years and years, driving the robot was easy, probably easier. Zombies weren't trying to eat me," he said.

"Today I just drove around the factory, navigating between tables and pillars, and other robots. I tried taking the tight spaces on purpose, just for kicks.

"I got a tour of the factory from a fellow named Bill. I followed him around, hearing about different projects, got to meet his lovely wife," Mr Phillips added.

"Then, yes, I raced Neuro-Switch creator Peter Shann Ford across the room. Again, I think gaming experience came in handy, as I smoked Peter and his dejected robot."

Mr Phillips said he wanted to use the robot to virtually visit the head offices of Apple and Google in California -- and other destinations.

"I think it would be cool to circle the Grand Canyon, or stroll around the Louvre, checking out all the paintings," he said.

"It'd be neat to roll down the streets of New York City, seeing if New Yorkers even gave the robot a second look. That would be fun."

He said technology was how the disabled affected change in the world, communicated thoughts and made one's environment cozy.

"The robot is a new tool for communication, and communication is our best way to affect changes that make life spectacular," he said. "I love shooting photographs from my Canon T3i tethered to my MacBook Air, love turning on my bedroom lights from my iMac. I love turning my thoughts into blog posts.

"I even love hitting software on my iMac and hearing my surround speakers get so loud my room shakes."

But a virtual experience was not the real thing, and disabled people needed access to physical experiences in the physical world, he said.

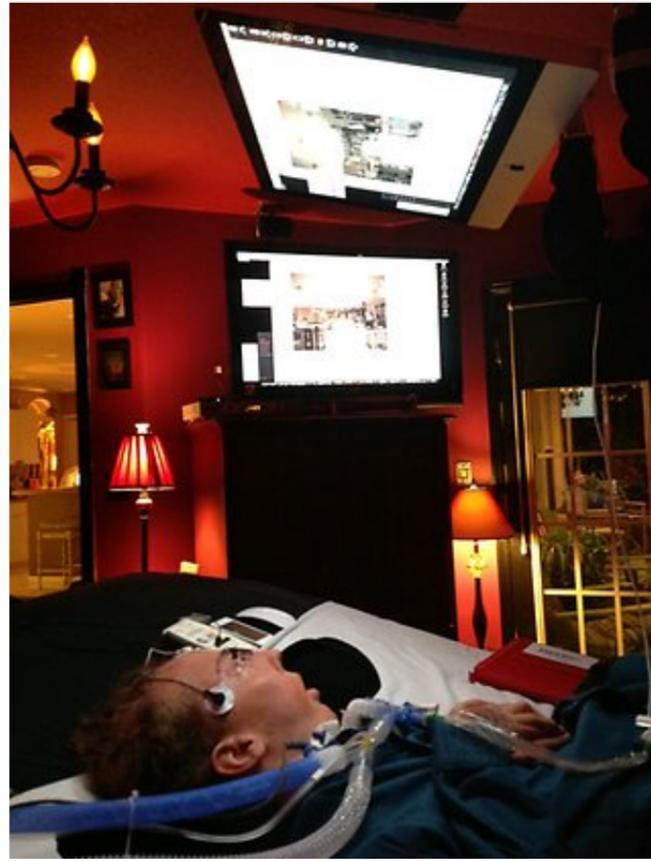
"Low expectations from others, and in ourselves, perpetuate the false idea that disabled people, especially severely physically disabled people, should totally love and accept a virtual life, virtual experiences through a robot," he said.

"Supports and services should give us access to the real world, personal assistants to get us to that smoky bar, thumpin' club, swanky restaurant.

"Real experiences are the goal, true independence. My personal assistant is my avatar, in that she gives my business card to a pretty girl, telling her that her next drink is from 'that fellow over there' and not 'that robot over there'."

Mr Ford said the robot race with Mr Phillips was "an exhilarating moment, when a young man more used to immobility in his bed, only escaping when he is carried to his custom wheelchair, suddenly feels like a kid again, able to run to race".

"This is the first of a new era, when people with severe paralysis can project beyond the confines of their bodies and travel, touch, work, at home or on the other side of the planet," Mr Ford said.



Severely disabled spinal muscular atrophy sufferer Michael Phillips remotely drives a robot over the internet using the frontalis muscle on his forehead. Source: The Australian