

# ALS patient pioneering brain-computer connection

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Rodney Gorham, who has a Synchron brain implant, works on a computer at his home in Melbourne with clinical field engineer Zafar Faraz.

As a rare form of Lou Gehrig's disease paralyzes his body, Rodney Gorham hopes a pioneering link between his brain and a computer will

help others after he is gone.

The 63-year-old Australian shared his thoughts by using his eyes to pinpoint letters on a screen and "clicking" on words with his mind.

Thanks to an eight-millimeter stent implanted in his [brain](#) to detect [neural activity](#), Gorham hopes to continue going online, sending messages and playing video games for a long time to come.

US company Synchron has been testing the "stentrode" for the past two years, getting cleared for [human trials](#) before Elon Musk's attention-grabbing Neuralink startup.

Gorham's implant connects to a small receiver and transmitter unit under the skin in his chest, and he credits it with changing his life.

Several years ago, Gorham was diagnosed with ALS, which causes progressive paralysis of the respiratory muscles, trunk, arms and legs.

The disorder is expected to gradually disable his movement, but not to kill him, according to his wife, Carolyn.

"So he could live for another 20 years. So think about if your body didn't move at all, your brain still firing at the same rate," she said.

"And you can't scratch your nose. You can't tell somebody you want to scratch your nose."

The [brain implant](#) gives her husband a "slice of life", letting him at least communicate or play a game, Carolyn Gorham added.

Rodney Gorham has given up on video games that require quick reactions typically made with handheld controllers or a [computer mouse](#),

but is still playing turn-based ones such as city-building games, according to his wife.

Without the experimental technology, the life of the sports car- and travel-loving former salesman "would be pure torture", Carolyn Gorham said.



Rodney Gorham, who has ALS, hopes the pioneering link between his brain and a computer will help others after he is gone.

## **Language of the mind**

Synchron hopes to get approval next year from health authorities to

market a final version of the device.

The startup said [clinical tests](#) have been conclusive but there is still a lot of work to do, notably in decoding brain signals and translating them into a universal language to command computers.

While eye-tracking tech enables a patient to target icons on a computer screen, the user must think of a motion—like kicking their foot or making a fist—to "click" an icon.

The software must be trained to recognize the brain signal that sends the command to the body, but people's minds "speak" in different ways.

Computers need a common neural language to understand the intent no matter who is thinking it, Synchron founder Tom Oxley said from his office in New York.

"That's a very interesting challenge we are facing now," Oxley told AFP.

"Building a system that is not just for one person, but for millions of people."

At his home in Melbourne, Rodney Gorham tells an AFP journalist that he was able to quickly learn to type using his mind.

While going through exercises to tune the software, he moves his feet as instructed. His hand moves an imaginary computer mouse on a tabletop.

At the start of the trial it took about two and a half seconds for Gorham's thoughts to prompt an on-screen click, but now it's a half second, Synchron engineer Zafar Faraz recalled while sitting next to the patient.





Rodney Gorham uses his brain implant to send messages, go online and play video games, even as his body becomes progressively paralysed.

## **Independence**

Gorham's contribution to improving the brain-computing interface has been "monumental", according to Faraz.

"I don't think we would be anywhere if he hadn't taken the brave step of volunteering and pioneering this technology," Faraz said.

Families of patients testing brain implants proudly compare them to astronauts bravely exploring a new world, said David Putrino, who oversees the stentrode's clinical testing in the United States and is

director of rehabilitation innovation at New York's Mount Sinai Health System.

"We select patients who hope to advance science for others more than for themselves," Putrino told AFP.

The doctor sees implants like stentodes improving overall health of patients whose conditions drastically limit social interaction, leaving them isolated.

"Recent studies show that solitude has the same effect on health as smoking 17 cigarettes a day," Putrino said.

The technology remains far from enabling real conversations, but it gives her husband much-needed autonomy, Carolyn Gorham said.

"Without the software... his life would be torture. I think that's the only way to describe it. It would be hell on earth.

"With this software the freedom that it will give him, just to be able to make decisions and look at things without asking somebody to do it for them. Just that little bit of independence is incredible."

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