# Brain machine interface makes stunning advances

https://www3.nhk.or.jp/nhkworld/en/news/videos/20240109140455428/

It's like something from science fiction. "Brain machine interface," or BMI, is a technology that enables people to operate a computer by sending signals directly from their brains, without using a keyboard or a controller. And the race is on to take it to the next level.

This YouTube video amazed viewers around the world. The man is playing an online game without touching a controller. He directs the movements of a character by sending signals from his brain through electrodes implanted in his head. Nathan Copeland is an American who has a physical disability. At age 18 he suffered a serious neck injury in a car accident. He can move his arms to some degree but has a hard time controlling his fingers.

Do you want the cap off?

At age 28, he participated in a research project at Pittsburgh University and had electrodes implanted in his brain. This device is connected to a cable that sends his brainwaves to a computer.

I kind of wanted to help make sure the people after me don't have to go through the same kind of period of depression and sadness after having an accident.

Aside from videogames, Copeland has participated in experiments to operate robotic arms. He can make large gestures like moving the arms back and forth. He can even open his robotic hand and move the fingers with enough precision for a handshake.

I'm kind of just thinking about moving my own arm. I'm just imagining as if it was my own hand moving

around and… It's pretty cool.

Research into BMI is also underway in Osaka University in western Japan. Professor Hirata Masayuki says the rapid progress in BMI has been driven by 2 factors.

Both the technologies of AI based brain wave analysis and implantable devices that accurately measure brainwaves have advanced. The practical use of these tools has enabled rapid development in this field.

Professor Hirata has been working on ways to make BMI even easier to use, developing a wireless device that connects the electrodes to a computer. The device is highly portable and has a much lower risk of causing scalp infection since the connector isn't exposed. He's now hoping to ensure safety through clinical studies with patients aiming to get it into practical use.

We hope to create a wireless, implantable BMI for people with severe physical disabilities as quickly as possible.

The potential of this technology is thought-provoking to say the least. The day may not be far off when people with disabilities and those without, will be able to remotely control robots and other machines by sending signals directly from their brains.

Source: (NHK World News)

**Now discuss the questions with a partner.**

1. What do you think of this technology?
2. Can you think of any other interesting ways to use this technology?
3. If you were involved in an accident, would you be willing to implant the electrodes in your head? Why or why not?
4. If it was possible to use this technology without implants, would you like to try it? How would you like to use it?
5. Have you seen any other new technological advances recently?