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Scientists make biocomputer with brain tissue – 18th December 2023

Level 4

Humans and machines are closer to merging. Researchers have built a "biocomputer". They combined lab-grown brain tissue with electrodes. They called their creation Brainware. It is in its early stage, but can already do complex tasks like voice recognition. The software could improve AI technology. AI hardware will also require less energy than silicon chips. A researcher said: "This is just proof-of-concept to show that we can do the job."

Brainware utilizes "organoids" - artificially grown bundles of tissue that act like an organ. Brainware organoids have developed neurons, like those in our brain. The next step is to look at how Brainware can perform higher-level tasks. The technology could help neuroscience research. It could also lead to cures for neurological diseases. A major challenge is to find answers to keep the living tissue alive for longer.

Level 5

Humans and machines are closer to merging after researchers in the USA built a "biocomputer". Bioengineers combined laboratory-grown human brain tissue with microelectrodes. They dubbed their creation Brainware. It is in its embryonic stage, but it can already perform complex tasks like voice recognition. Dr Feng Guo hopes the software will help to advance AI technology. It could also mean AI hardware requires less energy than silicon chips. Dr Guo said: "This is just proof-of-concept to show that we can do the job. We still have a long way to go."

The researchers said Brainware utilizes "organoids". These are artificially grown bundles of tissue that resemble an organ. Dr Guo's organoids have developed neurons, akin to those found in the human brain. The researchers' next step is to look at how Brainware can undertake higher-level tasks. The technology could be used to create improved models of the brain, and help neuroscience research. It could also lead to cures for neurological diseases. A major challenge is to find solutions to keep the living tissue alive for longer.

Level 6

The merging of human and machine has taken another step forward as researchers have built a "biocomputer". Bioengineers at the University of Indiana in the USA have combined laboratory-grown human brain tissue with microelectrodes. The scientists have dubbed their creation Brainware. It is in its embryonic stage of development, but it can already perform complex tasks such as voice recognition. Lead researcher Dr Feng Guo hopes his softer-than-usual software will help to advance AI technologies. It could also mean AI hardware uses far less energy than solely using silicon chips. Dr Guo said: "This is just proof-of-concept to show that we can do the job. We still have a long way to go."

The researchers said their Brainware system utilizes "organoids". These are artificially grown bundles of tissue and stem cells that resemble an organ. Dr Guo said his team's organoids are like mini-brains. They have transformed and developed neurons, akin to those found in the human brain. The researchers say their next step is to investigate how Brainware can be adapted to undertake higher-level tasks. The technology could one day be used to create improved models of the brain, and move neuroscience research forward. It could also lead to cures for neurological diseases. One major challenge for the researchers is to find solutions for how to keep the living tissue alive.