A mind-reading headset lets people fly drones using their thoughts

A group of people controlled drones using an EEG headset
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By **Chelsea Whyte**

I think, therefore I fly. Headsets that read brain waves are being used to fly drones, letting us control machines with just our thoughts.

A team from the Indian Institute of Science in Bangalore trained 14 people to control a multirotor drone using commercially available EEG headsets, devices that use small electrodes to test the electrical activity in your brain.

There have been other attempts to control multirotor drones using thought, but Subbaram Omkar, who led the research, believes the new system is accurate enough to control fixed wing drones – something which hasn't been done before.

Such aircrafts require more control because they move through the air continuously, whereas multicoptor drones can hover, whilst awaiting a command. Omkar says other systems that

To pilot the drones, people were asked to imagine four physical movements without moving any actual body parts: moving their left or right hand, and moving their left or right fingers and elbow. This thought process activates the sensory-motor cortex, even if no actual body parts are moved.

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An algorithm read the pilot's brain waves at 90 hertz – corresponding to gamma waves, which are thought to be associated with perception – and when a thought pattern was clear enough used it to steer the drone.

"If the person thinks of moving his legs instead of the arms, the algorithm outputs very low confidence levels for all the tasks. It means that the system is not sure what the subject is thinking. In such a case, no command is sent to the drone," says Omkar.

The algorithm interpreted instructions from brainwaves with an accuracy of between 77 and 98 per cent, depending on the pilot.

Brain-controlled drones could be used as a training course for those who want to strengthen their attention skills, says Marvin Andujar at the University of Florida.

"In my lab we have a simulation, like a video game where you fly a virtual drone with your brain," he says. People with ADHD have tried the game to help improve their attention abilities.

Similar principles have also been used to control prosthetic limbs. "If you want to control a prosthetic or a wheelchair or even drive a car with your brain, you can do the same thing. It doesn't have to be a drone," says Andujar.

Reference: arxiv.org/abs/1809.00346