Medical Xpress

No hands required -- scientists achieve precise control of virtual flight

October 26 2011

Scientists have designed a novel, noninvasive system that allows users to control a virtual helicopter using only their minds, as reported in the online journal *PLoS ONE* on Oct. 26. The researchers, led by Dr. Bin He of University of Minnesota, created an EEG-based, noninvasive brain-computer interface that allowed users to accurately and continually navigate a virtual helicopter simply by thinking about where they wanted to craft to go.

The task required users to direct their helicopter through randomly positioned rings in three-dimensional space (videos of the task available); these targets were reached successfully 85% of the time.

Much of the previous work in this field required invasive treatments that allowed for measurement of intracranial activity, but this new approach employs EEG in the form of a cap on the user's head. This noninvasive technique records a particular brain wave called the sensorimotor rhythm, which in turn can be characterized and calibrated to control the movements of the on-screen helicopter.

According to lead research Dr. He, "this work demonstrates for the first time that one can accomplish real-time, continuous 3-dimensional control of a flying object in a virtual world from noninvasive EEG-based brain-computer interface. Such ability used to be limited in cases where invasive recordings are used, thus the work opens avenues to noninvasive bio-navigation, or neuroprosthetics."

Medical Xpress

More information: Doud AJ, Lucas JP, Pisansky MT, He B (2011) Continuous Three-Dimensional Control of a Virtual Helicopter Using a Motor Imagery Based Brain-Computer Interface. PLoS ONE 6(10): e26322. doi:10.1371/journal.pone.0026322

Provided by Public Library of Science

Citation: No hands required -- scientists achieve precise control of virtual flight (2011, October 26) retrieved 19 September 2024 from https://medicalxpress.com/news/2011-10-required-scientists-precise-virtual.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.