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Datasea's Acoustic Tech Aims to Revolutionize Brain-Computer Interfaces

📊 KEY DATA

$20 billion: Projected market size for brain-computer interfaces (BCI) by 2030

2 initiatives: Assistive communication system for neurological patients and control system for upper-limb rehabilitation robots

4 days ago

Datasea's Acoustic Tech Aims to Revolutionize Brain-Computer Interfaces

BEIJING, CN – January 12, 2026 – Technology firm Datasea Inc. (NASDAQ: DTSS) has announced significant progress in what it calls "acoustic-driven" brain-computer interface (BCI) technology, a novel approach that could solve persistent challenges holding back the widespread adoption of non-invasive neural devices. The company unveiled two initiatives aimed at practical healthcare applications: an assistive communication system for patients with neurological conditions and a control system for upper-limb rehabilitation robots.

The developments signal a potential shift in the BCI landscape, moving beyond foundational research toward engineering-level systems that can function in real-world scenarios. By using sound and ultrasonic waves to enhance and interpret brain signals, Datasea aims to provide a more stable and reliable bridge between human intent and machine execution, a critical step for a market projected to reach up to $20 billion by 2030.

The Sound of Thought: A New Approach to BCI

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One key element is an acoustic-driven signal enhancement approach. Using a sophisticated technique based on NeRF (Neural Radiance Fields) acoustic field modeling, the system can essentially create a model of how sound propagates around the user's head. This allows it to use acoustic coupling to supplement and reconstruct incomplete or corrupted EEG data, enforcing physical and physiological consistency to improve the signal's overall integrity.

At the point of contact, the company is exploring the use of flexible MXene electrode membranes. Research in neurotechnology has shown that MXene-based materials offer superior biocompatibility and low electrical impedance, making them ideal for acquiring clearer neural signals with less interference than traditional electrodes. Datasea's design incorporates crosslinked β-cyclodextrin to improve stability in fluid environments, a critical factor for long-term, non-invasive use.

Finally, the system closes the loop with transcranial ultrasound modulation. This component allows the BCI to not only read brain signals but also send focused ultrasonic pulses back to the brain. This creates a real-time feedback mechanism, forming a complete cycle of stimulation, signal acquisition, data interpretation, and device execution. This closed-loop structure is designed to help the system dynamically adapt and optimize its performance, potentially leading to more intuitive and responsive control.

From Lab to Life: Targeting Rehabilitation and Assistive Care

The immediate focus for these technological advancements is the multi-billion-dollar healthcare market, particularly for patients whose lives have been upended by neurological conditions. The first initiative is a BCI-based assistive communication and care system. Designed for individuals who have lost the ability to speak or move, such as stroke survivors, the system aims to interpret

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To bridge the gap between research and deployment, Datasea has initiated a strategic collaboration with Nanjing Linghang, a China-based company specializing in BCI research and health robotics. This partnership is crucial for system-level validation, allowing Datasea to integrate and test its acoustic enhancement technologies within existing robotic architectures. It represents a tangible step toward commercialization and moving these advanced concepts into clinical and home settings.

Navigating a Multi-Billion Dollar Market

Datasea's push into applied BCI is strategically timed. According to market analyses from Grand View Research and Fortune Business Insights, the global BCI market is on a steep growth trajectory. Non-invasive technologies are forecast to be the fastest-growing segment, driven by their safety, lower cost, and broad applicability in areas like medical rehabilitation and consumer electronics.

Datasea's CEO, Zhixin Liu, framed the advancements as a key part of the company's long-term strategy. "These two BCI-related acoustic technology advancements represent another important milestone in the continued evolution of our acoustic-driven technology platform," she stated. "Building on our prior progress in addressing neural signal transmission stability, the new developments…further enable the interpretation and understanding of neural signals and their transformation into executable, structured control commands."

By focusing on creating a foundational technology that solves a core industry bottleneck, Datasea is positioning itself not just as a product manufacturer, but as an enabling force within the BCI ecosystem. Liu added that this approach strengthens the company's "core technology barriers" and supports collaborations with intelligent hardware companies.

competitive, with numerous startups and established academic labs working on novel hardware and decoding algorithms for EEG and other non-invasive methods. Datasea's unique acoustic approach must be rigorously proven to offer a substantial advantage over these alternative solutions.

Furthermore, any medical device, especially one that interfaces directly with the brain, faces immense regulatory scrutiny. In key markets like the United States, Europe, and China, companies must navigate complex and expensive approval processes with agencies like the FDA, and NMPA. This involves extensive clinical trials to demonstrate both safety and efficacy, a process that can take years and cost millions of dollars. For a novel technology without a clear predicate device, the regulatory pathway can be even more demanding.

Datasea's success will hinge on its ability to scientifically validate its claims, prove its real-world utility through partnerships like the one with Nanjing Linghang, and successfully steer its innovations through the gauntlet of global medical device regulation. If it can overcome these hurdles, its acoustic-driven BCI could indeed represent a significant leap forward in making neural interfaces a practical tool for improving human health and independence.

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